



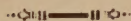
A pathway planted with Petunias and Sweet Alyssum in abundant informality.

The Book of Annuals



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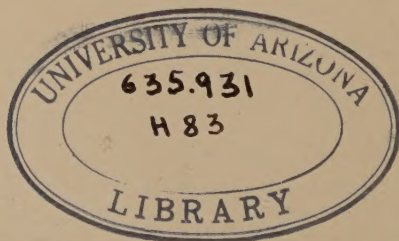


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PREFACE

THIS Book of Annuals has been written for the increasing throng of amateurs who grow flowers for the love of them. It is meant to be a guide through the season of annual bloom. It is hoped that it will open some doors to greater success and that it may introduce you to some new friends. Do not shun one of these new acquaintances because its name is long—no doubt your name also is long, difficult to pronounce, and with far less meaning.

And if you pause before planting because of lack of experience, remember that love of flowers finds a way as quickly as knowledge. There are friends on every hand ready and anxious to advise you. Advice from a flower lover is as free as the rain and the sunshine.

Credit should be given to some of my friends who have criticized and helped in many ways, and to the hopeless array of catalogs now upon my desk—all of whom and which have contributed to this brief account of the vast group of alluring annual flowers.

ALFRED C. HOTTES.

Columbus, O., February 14, 1922.

PREFACE TO SECOND EDITION

Each year the throng of amateurs wanting the best annuals has increased. A demand has been felt for a complete revision of this book, with many new features added. The forcing and commercial culture of annuals is stressed, many new and lesser known sorts are added, the cultural table has been greatly lengthened, more comprehensive lists are included and all names have been brought up to date. The book has been used as a textbook in various schools, and to make it more serviceable for that purpose, several features are added.

One firm in California devotes 2,000 acres to growing annual seed; scores of firms in United States, Germany and France are bending every effort toward improvement in form, color and profusion of bloom. Annuals were never more popular, in spite of the increased interest in bulbs and perennials. Americans are rapidly becoming garden lovers due to the garden clubs in each community. Join one of these clubs; live more fully and learn from each other. Gardening is a pastime for all ages of people.

ALFRED C. HOTTES.

Columbus, O., March, 1928.

THE USE OF ANNUALS

AMONG the choicest flowers scattered throughout the world are some whose lives are short; they sprout from seed, grow, flower, produce their seed, and die, all within the limit of our garden year. These are the annuals.

As W. Clutton-Brock says in his *Studies in Gardening*, "They have their little period of beauty, and then they give themselves up to business, the business of seeding. Unlike the other plants of the world, they put all their energy into seed production and store no food for another year; therefore, they produce no bulbs, tuberous roots or crowns. If it were not for our watchful care, many of the annuals would exhaust themselves early in the season."

Annuals are like Hawthorne's Miraculous Pitcher, which filled as soon as the fluid was poured from it. With annuals, the more blooms we pluck, the more they bloom. This is their great charm. They may be depended upon to make a good display of bloom the year they are sown.

All who read these words have a definite object in mind: Perhaps you are expert in their care and familiar with their habits, and read because the love of gardens prompts you to spend one-half the year rearing the flowers and the other half reading about them. Perhaps you have a new house and have resolved to make it a homelike place where flowers add their gentle touch. Or again, perhaps you have grown some of the annuals and are anxious to grow others because you like color, fragrance and form. There is nothing more fascinating than growing some different flowers each year.

For you who are just beginning your garden enthusiasm we must frankly write that you are plunging into dangerous waters. The interest in gardening is absorbing, it will draw you into many difficulties. You will neglect some of your work and the less enthusiastic gardeners of your family will sometimes criticize your personal appearance. They will often hint that you seldom rest. They will think that you are trying to be superior when you tell them their botanical names. But do not fear, for no matter what they say, you may depend upon their accepting the flowers after you have grown them.

Persons who appreciate annuals most are the ones whose homes are surrounded by permanent plantings of shrubs and perennials. They are wise enough to know that each particular season may be severe for some sort of plant and that if Spring finds them without a few packets of annual seeds on hand, they will regret the lack of foresight. Let the annuals serve as understudies for the shrubs and perennials, so that should they sicken and die the annuals can be substituted.

For filling in the vacancies of the garden, annuals are essential. Seldom is there a perennial border that would not be better for the use of annuals.

As Benjamin Goodrich once wrote in *Country Life in America*:

Nature, at whose feet every one who does any gardening must sit and learn, settled the question once for all, ages and ages before mankind began to cultivate flowers, by creating the annual as the great filler-in of the vegetable world—the finishing touch to her handiwork. Where the “stay-puts,” for one reason or another, would not stay put, there she let crop up in temporary glory the race of plants that is born in the Springtime to die before Winter sets in. As it is in the wild so it is among the habitations of men; the foundation of any garden worthy of the name—that is any garden that is to endure—is the perennial, but without the transitory charm of the annual there is something lacking.

Because some of the annuals are often of a short season, some of them should only be used as fillers among other dependable annuals, perennials and shrubs.

Someone has said that annuals are “the tenants’ floral standby” inasmuch as those who rent their homes feel as keen a need for flowers as those more permanently established. When the income is limited, they often feel that money should not be spent upon the more lasting, slower developing shrubbery and perennials. A few dollars spent on annuals will bring joy to these families and when they have to move there will be fewer regrets. So it is with those persons who have modest country homes or cottages at the lakeside. How much a few flowers add to the livability of these houses!

How many city homes are without gardens in spite of the opportunities offered by windowsills and porches. Hanging baskets, pots of flowers and porch boxes all demand annuals. Have vines to trail, climb, shade and frame views. Have annuals in boxes and pots to convert the porch into a veritable garden. Perhaps you have ridden in the elevated trains in New York City and noticed the Geraniums in tin cans, the vines upon fire escapes. They are the expression of a universal human hunger for flowers.

The hearts of children respond to flowers, especially when the parents encourage the interest. They love the bright colors. They

enjoy planting the seeds, watching the plants grow, seeing them produce the gay flowers. Every home yard should afford some little space where the boys and girls may have a garden of their own. Instill in children this love of beauty and they will not outgrow it; our whole country will be embellished with flowers in the future. The desert and Arctic regions produce their flowers, their climatic obstacles notwithstanding; yet all too many homes are without flowers in states where rain falls abundantly and the sun tempers the climate.

Dr. L. C. Corbett once wrote:

Plants are the missionaries of Nature constantly at work attempting to cover some ugly scar which civilized man has made in his struggle to wrest from the earth the living which he claims she owes him. If you will but give Nature the suggestion of your wishes in the form of a few choice seeds she will paint for you the rich shades of the Pansy or the Phlox; she will carpet your floor with a velvet rug of green and strew upon its surface in bold contrast the golden disks of the Dandelion or the bright, saucy faces of the Crocus. She will drape your walls with a festoon of green and hide therein rich gems of purple, of crimson, and of white; and, if you ask it, she will screen one apartment from another with barriers of green which may or may not carry bright floral gems."



MESEMBRYANTHEMUMS OR FIG-MARIGOLDS

These attractive rose-colored flowers open in full sunshine

Summarizing the uses of annuals, we may justly claim:

1. They are less expensive than other plants; no one is too poor to afford them.
2. They are profuse flowering.
3. Some bloom for a longer period than even shrubs, perennials, or trees.
4. There are sorts adapted to all purposes.
5. They are valuable to teach the lesson of persistence, neatness and accuracy to the rising generation in the school gardens. The school garden has a definite and worth while place in the education of youth.
6. They are useful for the rented home, or cottage.
7. They are unequaled for cutting, for decorating the Summer table or porch.
8. Window and porch boxes of tenement as well as mansion need annuals.
9. Many self-sow and are, therefore, relatively permanent.
10. They fill the spaces ravaged by the exigencies of the seasons.
11. Tall, rampant sorts, will hide unsightly objects quickly, effectively and cheaply.
12. Among annuals are some incomparably dainty and profuse flowered climbers.

Habitat of Annuals

Having alluded to the cosmopolitan character of annuals, let us go a step farther and speak definitely of their widespread distribution and the emigrants which we have welcomed to our garden borders.*

From India has come *Emilia*, the Tasselflower, *Gomphrena*, the Globe-amaranth.

In the East Indies, the Four-o'clock, *Mirabilis jalapa* is wild, and from the East Indies have come *Amaranthus caudatus*, *Celosia cristata* and *pyramidalis*, *Dolichos*, different species, most of the annual Gourds, *Impatiens balsamina*, the Balsam, *Thunbergia alata*, *Cleome spinosa*, Spiderflower, *Hibiscus manihot*, Sunset Hibiscus.

From China we have *Callistephus hortensis* or China-asters, *Dianthus chinensis*, and *Perilla nankinensis*.

Australia has given us *Helipterum roseum*, *Ammobium alatum*, *Brachycome* or Swan-river-daisy, *Cephalopterum drummondi*, *Trachymene caerulea*, *Helichrysum*, *Helipterum* or *Rhodanthe*, *Podolepis gracilis*, and *Platycodon grandiflorum*.

*Derived mainly from notes by Robert Cameron in Transactions of Massachusetts Horticultural Society.

Africa has given us *Arctotis*, *Cryptostemma*, *Dimorphotheca*, *Hebenstreitii*, *Lobelia erinus*, *Linum grandiflorum*, *Malope*, *Nemesia*, and *Senecio elegans*.

From South America, *Alonsoa*, *Browallia*, *Gilia*, *Hunnemannia*, *Salvia splendens*, *Martynia*, *Petunia*, *Salpiglossis*, *Schizanthus*, *Tropaeolum majus* and *minus*.

Mexico gave us *Ageratum houstonianum*, *Argemone mexicana* and *grandiflora*, *Cosmos bipinnatus*, *Maurandia lophospermum*, *Maurandia barlaiana*, *Sanvitalia*, *Tageles erecta* and *patula*, *Zinnia elegans* and *huageana*, *Cobaea scandens*, *Hunnemannia*, *Goldencup*.

From Europe, *Antirrhinum majus*, *Calendula officinalis*, *Centaurea cyanus*, *Convolvulus tricolor*, *Delphinium ajacis* and *consolida*, *Iberis amara*, *odorata*, and *umbellata*, *Lathyrus odoratus*, or Sweet Pea, *Matthiola incana*, *Nigella damascena*, *Papaver rhoeas* and *somniferum*, *Reseda odorata*, and *Scabiosa atropurpurea*.

California gives us an immense lot of good annuals: *Abronia*, *Baccharis*, *Meibomia*, *Clarkia*, *Coreopsis tinctoria* and *atkinsoniana*, *Eschscholtzia*, *Phacelia*, *Gilia*, *Godetia*, *Lasthenia*, *Leptosyne*, *Nemophila* and *Oenothera*.

Coreopsis drummondii and *coronata* and *Phlox drummondii* come from Texas.



Left, *Collinsia bicolor*; right, a collection of Everlastings from Australia and India

Combining Annuals

One of the pleasures of the garden is to make attractive combinations of the annuals. We all want to extend the season of bloom and at the same time have pleasing color combinations. A few are here suggested:

Orange and scarlet: Nasturtiums, Calliopsis and Nasturtiums, African Marigolds with Scarlet Sage, Zinnias, Zinnias bordered by French Marigolds, Gaillardias and French Marigolds.

Lavender or violet with orange: Orange King African Marigold bordered by Ageratum; lavender or violet, China-asters with French Marigolds to fill the space before the China-asters bloom, Larkspur with California-poppy, Salpiglossis.

Pink and blue: Blue Larkspur with pink Larkspur, pink Phlox drummondii to edge bed of blue Larkspur; China Pinks edged with Ageratum with background of Cornflower, Nigella with pink Drummond Phlox.

Deep blue and yellow: Calliopsis with Cornflower, Lilliputian Zinnias to edge bed of Larkspur.

Light pink and pale yellow: Snapdragons, Lemon Queen Marigolds edged with Snapdragons, Phlox drummondii, light pink Verbenas to edge bed of lemon Snapdragons, Scabiosa.

Gray-leaved plants with pink or other pleasing color: Dusty-miller and pink Snapdragon, Ten-week Stock.

Maroon-colored annuals contrasted with white: Black Prince Snapdragon, maroon Scabiosa with ornamental Tobacco; bed of Black Prince Snapdragon edged with Sweet Alyssum.



ORDERING SEEDS

EACH year the garden lover scans the pages of the seedsmen's catalogs to choose a new rainbow for the garden. As Spring approaches there returns a perennial desire to have a more carefully planned garden. We "read, mark and inwardly digest" the catalogs and at the end select thirty or forty sorts for the garden, and your choice should always include some of the so-called old-fashioned flowers so loved by us all.

Annual seeds are always cheap at any price when we take into consideration the results that may be attained with them.



It is strange that this Mexican Marigold, *Tagetes signata* var. *pumila*, is not better known. It is an ideal edging plant

Frequently the question is asked: "Why are my flowers so small, so single, or of such a poor habit of growth?" Sometimes this question can be truthfully answered by saying that the person has purchased inferior seed. Hence the admonition: Buy the best seed obtainable.

Some of the largest and most fully double flowers produce but little seed. Seed of the best Pansies, Sweet Peas, China-asters and Petunias is always more expensive than the seed of ordinary mixed sorts. Newer varieties are usually more expensive because each seedsman has but a limited quantity of their seed.

When browsing over a catalog it is better to mark a packet of each of several good colors of the flowers you want than several packets of the mixed varieties. The clear colors are usually better selected. Those who like mixture should sow together the colors they prefer.

Whenever seed is offered in bulk for a few cents more than a packet would cost, remember that you get a larger quantity by buying one-sixteenth ounce than is usually sold in a packet of presumably the same weight.

Many persons are led to buy seeds by the beautiful picture on the envelope and neglect to think of the seed within. Generally it is best to patronize seedsmen who have regular stores for selling seeds, or those who issue catalogs. Grocers and ten-cent stores usually are not seedsmen. They cannot advise you what to buy nor are they fitted to handle the freshest seeds of the better varieties.

Shall you order seeds of novelties? The attractive first few pages of many catalogs display the newer sorts of flowers. Remember that these flowers have not been tested widely, that they may not be adapted to your locality, and having been recently produced the seeds may not always come true—yes, remember all these things, and then if you are tempted to try them, do so. You may be surprised, they may prove a joy because of their rareness, and if they are not wholly successful, bear in mind that curiosity costs something. Yet no packet of seed listed in a catalog ever cost a fortune.



WHY IS AN ANNUAL?

RECENT experiments in the Department of Agriculture tell us why one plant is annual and another is perennial. There seems to be a definite length of time for each plant to grow, store food, and flower. Annuals are flowers which seldom have very strict length-of-day requirements. The short days of early Spring favor the blooming of the wild Violet; the long days of Summer are needed for the growth of leaves. Biennials, according to this length-of-day explanation, then are plants which wait a whole year before the light conditions are right for flowering. If Cosmos is grown in a greenhouse and supplied with artificial light to make the Winter days longer, the plants grow taller and taller but they will not bloom until the day shortens. We see then that the height of the plant is determined by the varying lengths of daytime. When the Scarlet Runner Bean is grown with short days, they produce tubers and become perennial. The constant flowering annuals are plants indifferent to length of day providing that it is long enough.



Two suggested annual border planting plans. Other suggestions for the use of different annuals in combination will be found on pages 19 and 20

CLASSES OF ANNUALS

THROUGH the literature of annuals there has grown up a classification of annuals, namely, hardy, half-hardy, and tender sorts—a division which does not truly apply to the annuals. It is more to the point to speak of:

1. Annuals which self-sow or those whose seeds stand much cold.
2. Annuals which tolerate little cold.
3. Annuals which require a long growing season before they bloom.

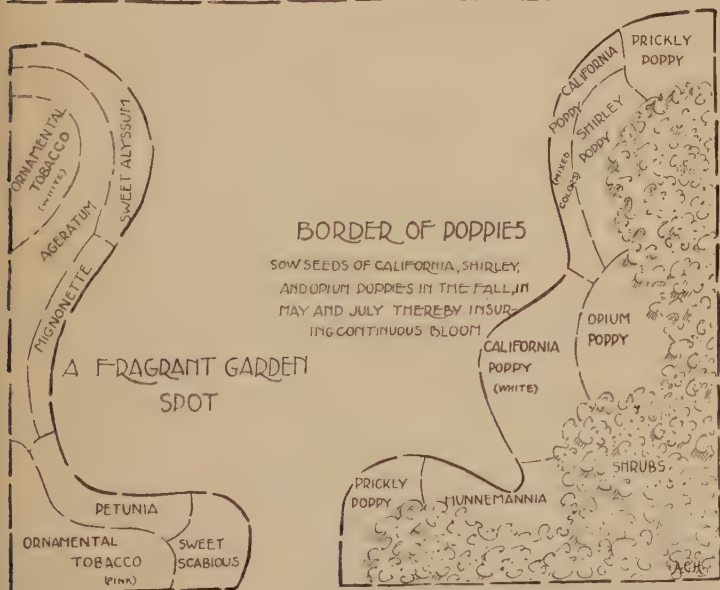
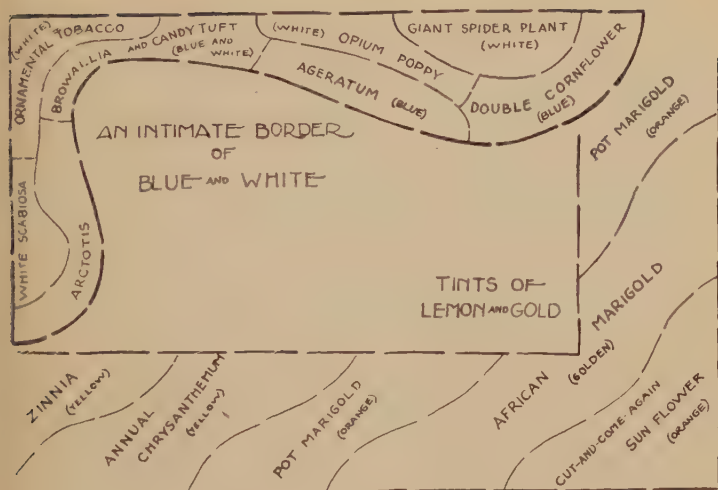
Even this is not truly a valuable classification, but for convenience let us think of the vast array of sorts coming into such classes according to their culture.

Annuals Which Self-sow, the so-called hardy annuals

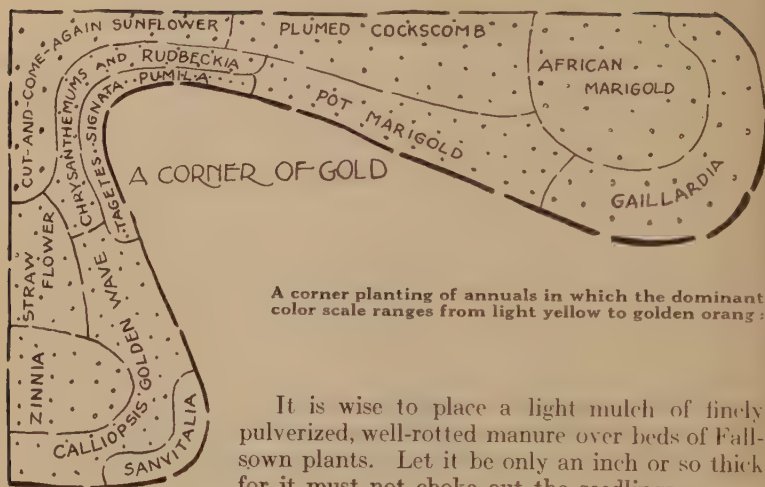
The word "hardy" applied to plants has a different meaning than "hearty," although some persons speak incorrectly of "hardy Castor Beans," meaning that they are strong growing. Hardy means that the annual will stand the cold and may be sown with perfect safety either in the late Fall or early Spring. Such annuals are usually sown directly in the beds and transplanted farther apart as they need more space. No strict lists can be given of hardy annuals, for hardiness is a variable quality. Some annuals are hardy in sandy ground; others are hardy because the snow covers the soil and protects them over Winter; while in some parts of the United States an entirely different list would be necessary because the cold weather is of short duration. Hardiness when the word is applied to annuals means that the seeds are not injured by cold. Some plants treated as annuals are really perennials which are not hardy enough to stand the cold. We call the Castor Bean an annual, whereas it is really a shrub in warm countries.

Many of the hardiest annuals can well be sown in the Fall. Under these conditions the seedlings germinate early in the Spring and come into bloom as quickly as if the seeds had been sown indoors or in a hotbed. This group will also include those annuals which may be sown as early as desired in the Spring.

Some of them may germinate in the Fall and make some growth before Winter, which is advantageous, for then they usually start growing after Winter passes as though nothing had happened.



Four suggestions for arrangements of annuals with which to beautify garden nooks and corners. Above, are shown combinations of blue and white and lemon and gold respectively. Below, the borders provide fragrance in the one case and a solid Poppy effect in the other



A corner planting of annuals in which the dominant color scale ranges from light yellow to golden orange:

It is wise to place a light mulch of finely pulverized, well-rotted manure over beds of Fall-sown plants. Let it be only an inch or so thick for it must not choke out the seedlings.

The following annuals may be sown in the Fall:

ALYSSUM, SWEET
ANTIRRHINUM (Snapdragon)
CALENDULA (Pot-marigold)
CENTAUREA (Cornflower)
CLARKIA
DELPHINIUM (Larkspur)
DIANTHUS (China Pinks)

ECHINOCYSTIS (Mock Cucumber)
ESCHSCHOLTZIA (California-poppy)
IBERIS (Candytuft)
NIGELLA (Love-in-a-mist)
PANSY
PAPAVER (Poppy)
PORTULACA (Sunrose)
SWEET PEAS

Besides these, many sorts self-sow their seed. That is, they send up what the gardener calls "volunteer plants." Let us read what Helen R. Albee writes in *Hardy Plants for Collage Gardens* about self-sown annuals.

"My walks are covered with sand, for it does not track into the house as the native soil would. Sand has another advantage; it serves as a seed bed for a multitude of self-sowing plants. When I desire particularly strong annuals, I do not plant the seed; I look about my walks until I find them. They have stood the test of Winter and a frosty Spring. Anyone who has watered seeds to young planthood has a genuine admiration for self-supporting, walk-grown plants."

If the border is somewhat protected with a mulch of garden trash or manure many sorts will spring up. It is then that the garden lover

is pleased that he knows the difference between flower seedlings and weed seedlings. A few seedlings are shown in illustration, page 27.

Watch out for the following annual seedlings; although your climate may not favor all of them, many of them may be depended upon to self-sow:

AGERATUM (Flossflower)	ESCHSCHOLTZIA (California-poppy)
ALYSSUM (Sweet Alyssum)	GAILLARDIA (Blanketflower)
AMARANTHUS (Love-lies-bleeding)	GOSETIA
(Princesfeather)	GYSOPHILA (Babysbreath)
ANTIRRHINUM (Snapdragon)	HELIANTHUS (Sunflower)
ARGEMONE (Pricklypoppy)	IBERIS (Candytuft)
BROWALLIA (Amethyst)	IMPATIENS (Balsam)
CALENDULA (Pot-marigold)	IPOMOEA (Morning-glory)
CENTAUREA (Cornflower)	KOCHIA (Summer-cypress)
CLARKIA	NIGELLA (Love-in-a-mist)
CLEOME (Spiderflower)	NICOTIANA (Tobacco)
COREOPSIS (Calliopsis)	PANSY
COSMOS	PAPAVER (Poppy)
DELPHINIUM (Larkspur)	PETUNIA
EPHINOCYSTIS (Mock-cucumber)	PORTULACA (Rosemoss)
EPHORBIA (Snow-on-the-mountain)	TAGETES (Marigold)
	ZINNIA

Annuals Which Require a Long Growing Season Before They Bloom

This is a convenient class in which are placed principally those annuals which benefit by being given an earlier start than they would receive if sown directly in the open ground. This class is often called half-hardy, but the question is generally not hardiness but an early start that is needed. Usually it is not safe to sow them outside until danger from frost is passed. The growing season of northern United States is a trifle short to permit these sorts to bloom early. Usually they require warmth during their early growth. Sow them, therefore, in the hotbed or in boxes in a sunny window in March.

In this class belong the following:

AMMOBIUM (Winged Everlasting)	LINUM (Flax)
CENTAUREA (Sweet-sultan) (Basketflower)	LOBELIA
CHINA-ASTER	JOBS-TEARS (Coix)
CYPRESSVINE	PENNISETUM (Fountain Grass)
DATURA (Angel-trumpet)	PETUNIA
HELICHRYSUM (Strawflower)	PHLOX DRUMMONDI
HELIPTERUM HUMBOLDTIANUM	SCABIOSA (Pincushionflower)
HORDEUM	THUNBERGIA (Black-eyed-susan)
HUMULUS (Hop)	VERBENA
HUNNEMANNIA (Goldencup)	XERANTHEMUM (Immortelle)

Annuals Which Tolerate But Little Cold

Tender annuals are those which can stand no cold either in Spring or Fall, in neither the seed nor the plant stages. They are juicy-leaved sorts which often have no ability to adjust their protoplasm so that it will lose water, become dormant and, therefore, hardy. They should never be sown out in cold soil but only when the trees are in leaf. When sown in March in a warm window or hotbed, they will bloom earlier than otherwise.

The following annuals are generally considered tender. (Those marked with a * sometimes self-sow, but are best treated as though tender):

* AGERATUM (Flossflower)	MOMORDICA (Balsam-apple)
* BROWALLIA (Amethyst)	NASTURTIIUM
CANARY NASTURTIIUM	NEMOPHILA (Love-grove)
CHRYSANTHEMUM, ANNUAL	* NICOTIANA
* CLEOME (Spiderflower)	PHACELIA
COBAEA	PHASEOLUS (Scarlet Runner Bean)
CONVOLVULUS MINOR (Dwarf Morning-glory)	RHODANTHE (Swan-river-everlasting)
DOLICHOS (Hyacinth-bean)	RICINUS (Castor-bean)
EUPHORBIA HETEROPHYLLA (Annual Poinsettia)	SALVIA (Scarlet Sage)
GOURD	SALPIGLOSSIS (Painted-tongue)
* IMPATIENS (Balsam)	SCHIZANTHUS (Butterflyflower)
LINARIA (Toadflax)	STOCK
MESEMBRYANTHEMUM (Iceplant, or Fig-marigold)	TAGETES SIGNATA PUMILA (Mexican Marigold)
MIGNONETTE	TRACHYMENE (Laceflower)
MIMOSA (Sensitiveplant)	TORENIA (Wishboneflower)
MIMULUS (Monkeyflower, or Muskplant)	VERBENA
	ZEa (Rainbow Corn)



SEED SOWING

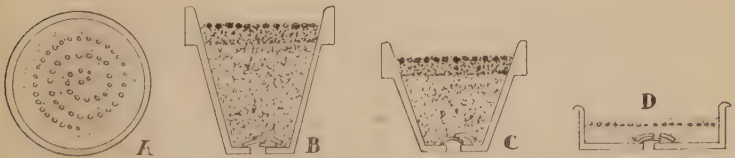
SOIL. Young seedlings have but few roots and leaves and are able to take little food from the earth. For this reason it is wise to sow seeds in loose, but not too rich, soil. A heavy clay which bakes should have ashes or sand added to it to loosen its texture. Manure, unless applied months before, is not necessary.

If you are going to sow seeds in boxes in early Spring, it is well to store a quantity of soil in the basement over Winter. Moisten it once a month to keep it in good condition but do not keep it wet, else it will sour.

SOWING IN POTS. When not more than twenty-five plants of each kind of flower are wanted, pots will be the easiest to manage. If possible use the shallow seed pots or pans which range in size from 4 to 8 inches in diameter. Seedlings require but little soil and if there is too much of it, it sometimes becomes sour.

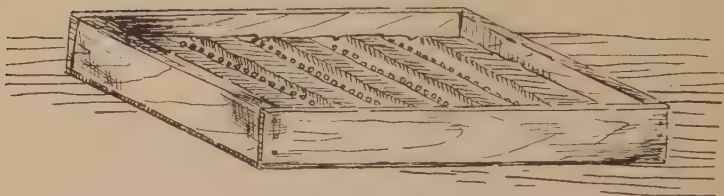
Clean the pots thoroughly by scraping them out with a knife and stiff paper. They are made porous so that air may enter the soil; keep them so. Place a piece of broken crockery over the hole in the bottom of each pot to prevent the soil from sifting out, but do not close the hole in such a way that water cannot pass out freely.

When deep, standard flower pots are used it is wise to fill them to within 2 inches of the top with coarse material. This may consist of grass roots, broken pottery, or the roughage left when soil is sifted.



Sowing seeds in pots. A. Sowing seed in a spiral insures space between the seedlings and their even distribution. B. --Seeds started in a standard pot. C. Seed in a three-quarters pot or Azalea pan. D. -- A seed pan. Note broken crockery in bottom of all pots and rough drainage material in the deeper ones.

Also the space left at top of each pot for watering and ventilation



Flat for seed sowing

It is now thought advisable to sterilize the soil when sowing many of the sorts which damp-off easily. For the purpose of sterilizing seed and soil, Semesan and Uspulin are commonly used. (See page 26.)

The soil in which the seed is to be sown should be finely sifted and filled in to within an inch of the top of the pot. Filling the pots too full and failure to use enough soil are equally to be avoided. Press the soil down firmly and make it perfectly level; if otherwise, the water will settle to one side.

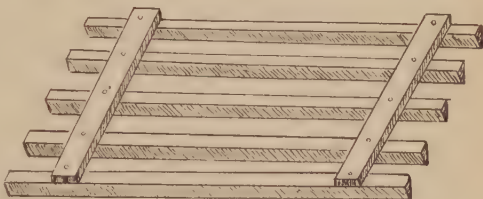
Sow the seeds thinly and in a spiral as shown on page 23. This method is analogous to sowing the seeds in rows and is advantageous because one can more easily weed the seedlings. Large seeds are covered three times their diameter with sand. Why sand? Because the seedling sprouts can push up through it more easily than through soil. Furthermore, the young plants are less liable to become diseased in their young stages. Use special precautions in sowing the finer seeds. (See page 25.)

Water the seeds thoroughly with a fine spray from the sprinkling can so that the soil is not washed. Cover the pots with panes of glass so that the moisture will not evaporate from them too quickly. Then shade the pots with a newspaper. Most seeds prefer to germinate in the dark, but as soon as the seeds have germinated the paper must be removed or the seedlings will be tall, spindly and weak. Full light must be available if one is to produce stocky, hearty plants. Compare the seedlings shown in illustration on page 28.)

SOWING IN BOXES. When large quantities of flowers are to be grown it is well to sow the seeds in boxes or flats about 3 inches deep. It is a mistake to try to make these water-tight; rather place the bottom boards a quarter of an inch apart or bore five or six holes in the bottom to afford good drainage. Place some broken pottery over the holes and rough material in the bottom of the flats, following the plan given in connection with the use of pots for seed sowing.

There is one important point to remember when flats are used: Never sow the quick-germinating sorts in the same box with the slower kinds because when one needs light and water the other may be needing darkness and no water. When in doubt use a separate flat or pot for each sort. For ex-

ample, it is unwise to sow Petunias and Ageratum in the same flat with Sweet Alyssum. The Petunias will not all start together and some will take weeks to germinate, while the Sweet Alyssum will germinate in a few days.



A handy frame for marking out rows in a seed flat

SOWING OUT OF DOORS. Some gardeners who say with much emphasis, "I love flowers," sow seeds in such a way as to belie their words. With a hoe or rake they scratch the soil to a depth of an inch or so—and sow the seeds. The hot sun dries the surface soil. The seedlings fail to germinate, or having germinated, find difficulty in sending their meagre roots into the heavy, sodden soil beneath. The sowers then say, "The seed was poor. I'll never buy any more seed from that firm." Had the soil been well spaded, had manure been added, or sand or ashes mixed with the surface layer, success would have attended their efforts. The first commandment of successful plant growing is to do your level best to fully prepare the soil.

Some seeds may be sown where they are to remain, others must be transplanted. Some seedlings are difficult to transplant; these are discussed on page 27. (See also illustration on page 28.)

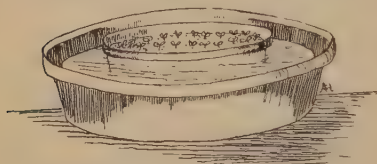
Seeds which are slow to germinate may be covered with burlap which will retain the moisture.

SUCCESSING WITH FINE SEEDS. Garden lovers who are successful in sowing the smaller seeds will usually have less difficulty with larger ones. By fine seeds we mean those of:

ALONSOA (Maskflower)
ANTIRRHINUM (Snapdragon)
LOBELIA
MIMULUS (Monkeyflower)
NICOTIANA (Tobacco)
PAPAVER (Poppy)
PETUNIA

PHLOX
PORTULACA (Rosemoss)
REHMANNIA
SALPIGLOSSIS
SCHIZANTHUS (Butterflyflower)
TORENIA (Wishboneflower)

In sowing these, follow the recommendations already mentioned but do not cover the seeds with soil. When pots or flats are employed use a cheap grade of tissue paper as a cover for the seeds and do not omit the pane of glass over the pot or box. Some persons find it advisable to thoroughly water the soil before sowing, thus eliminating the danger of washing away the tiny seeds.



To water fine seeds or seedlings place the pot or pan in a dish of water so the moisture can seep up from below. Less damping-off follows this method

Small seeds sown out in the open are best covered with bur-lap which can be sprinkled from time to time.

PREVENTING DAMPING-OFF FUNGUS. A juvenile disease, damping-off, attacks the young plants at the surface of the soil and soon causes great loss. To prevent this, the careful gardeners of this country are now sterilizing soil and often seed by treating them with two organic mercury compounds, known as Semesan and Uspulin. These are in the trade and should be used as advised by their manufacturers either as a dust, a spray, or as a soil drench.



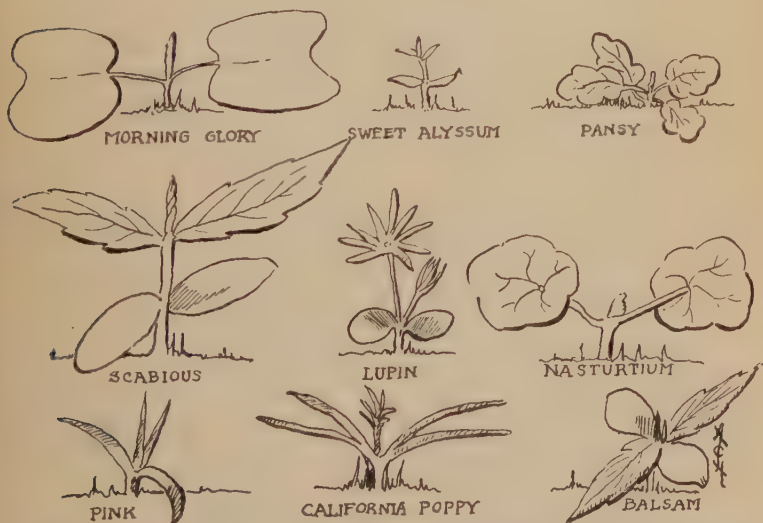
Left, the lustrous flowers of the Blazing-star, Bartonia; right, the glorified Petunia-like flowers of the Salpiglossis

TRANSPLANTING

GENERALLY speaking, most annuals are sown too thickly and are not transplanted or thinned out soon enough. Tall, leggy, crowded seedlings are disappointing.

When the first true leaves appear the plants should be carefully lifted and transplanted. Each annual develops best when given plenty of soil and air; and experience teaches us the proper space each sort requires. (See under cultural notes, pages 52 *et seq.*)

DIFFICULT TO TRANSPLANT. Some annuals which do not stand transplanting well should be thinned. It takes a brave hand to pull the surplus young hopefuls and an optimistic mind to believe that the remaining seedlings will ever occupy the space recommended. The



Seedlings of some common annuals, showing the seed leaves and the first true leaves. Most seedlings are ready to transplant at this stage

Pealike and Poppylike annuals and those with long, unbranched roots are the ones most difficult to transplant. The following reference list of such sorts will be found useful:



Good and poor seedlings contrasted. The poor one at the left is tall and spindly—the seed was sown too thickly and the plants got too little light. Note also its long, unbranched root system which will make it hard to transplant without a check

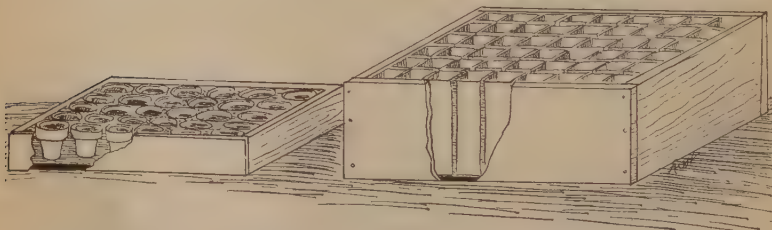
ARGEMONE (Prickle-poppy)
 ESCHSCHOLTZIA (California-poppy)
 HUNNEMANNIA (Goldencup)
 LACEFLOWER
 LAVATERA
 LUPINE
 MIGNONETTE
 POPPY (Shirley and Opium)
 SWEET PEAS
 SWEET SULTAN
 VINES (Most annual sorts)

Such annuals are well sown in individual pots—three or four seeds in each. When the seeds germinate, all but one of the seedlings may be removed. (See illustration below.)

HOW AND WHEN TO TRANSPLANT.

Transplant when the seedlings crowd each other. Water the soil several hours before transplanting in order that as much as possible will adhere to the roots. It is well to choose a dull day for moving tender seedlings. If the sun is shining, the seedlings and the larger plants as well, should be covered with newspaper or flower pots so that their tops will not dry out. Two other precautions are advisable: puddling the roots and shortening the tops.

If one makes a thin mud of clay and water and dips the roots of the



For seedlings hard to transplant, small pots or paper bands may be used to advantage. This is an especially good way to start Sweet Peas. Place soil between the pots to prevent them from drying out quickly

plants into it, a layer of soil will be formed about the roots and check evaporation, a precaution especially valuable when the soil is dry.

Whenever we dig a plant we injure its roots. This being the case, it is generally advisable to cut off a portion of the leaves to create a balance between the injured roots and the leaf area.

If these things are done plants may be moved at any time if watered thoroughly and shaded immediately thereafter.

PINCHING

SOME annuals do not branch as freely as we might wish, while others hurry into bloom before the plants attain a desirable bushy form or sufficient size. If we pinch them, that is, nip out the top buds, they will usually branch freely and bloom more abundantly. In most cases one had best not pinch all the seedlings because pinching often delays the bloom. It is, therefore, wise to pinch half of the plants, allowing the others to bloom naturally. Pinching can thus be both beneficial and harmful, and should be done judiciously. (See illustration below.)

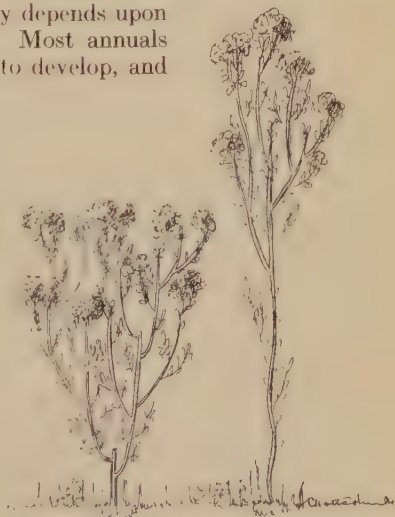
Crowded seedlings should not be pinched, nor should the varieties whose beauty depends upon a large rocket spike of bloom. Most annuals branch freely when given space to develop, and do not require pinching.

Pinch These

AGERATUM
BROWALLIA
CALENDULA (Butterflyflower)
(Schizanthus)
CHRYSANthemum, ANNUAL
PERILLA
PETUNIA
PHACELIA
PHLOX
PINKS
SALPIGLOSSIS
SNAPDRAGON
VERBENA
ZINNIA

Do Not Pinch These

COCKSCOMB
EVERLASTINGS
IMPATIENS (Balsam)
POPPY
STOCK



The effect of pinching or topping is shown in the plant at the left

THE HOE vs. THE HOSE

The careful gardener conserves more water than he applies. By preventing the soil from baking and cracking at the surface we prevent the escape of moisture into the air and thereby conserve it below. Plants give off large quantities of water from their leaves but if one keeps the soil well stirred after each rain there will be but little loss of moisture from the dry, powdery surface.

Those flowers which need the most water are usually found to be growing on soil that has not been prepared deeply.

In addition to the mulch of loose soil, maintained by cultivation, grass clippings and fine litter will help conserve the supply of water.

WATERING vs. SPRINKLING

More plants are injured by sprinkling than by drought. If you believe that water is needed, make a good job of it and do not merely give the plants a "dribble" each day. Seedlings given frequent sprinklings, soon become diseased. Water them well, then wait until they are nearly dry before doing it again. Seedlings are easily watered by placing the pot in which they are growing in a dish of water so that the moisture rises from below. (See illustration, page 26).

It makes little difference in the Summer whether one waters in full sunlight or at night, except that water applied in the evening will be more effective because the sun has no chance to quickly evaporate it. However, seedlings started early indoors or in hotbeds should be watered in the morning so that moisture will not stand upon the leaves over night.

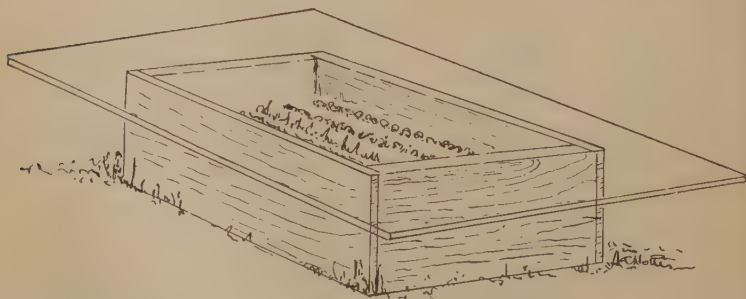
Persons sometimes notice that their plants have wilted when watered in the sunshine. This has been due to the fact that they have merely sprayed the leaves and have not applied enough water to the roots. When there is sufficient water at the roots the tops will not wilt unless the weather has been very dull and the growth has been abnormally soft.



PREPARATION OF HOTBED. Cover the frame with boards during the Winter to keep out the snow. Early in March in some localities, such as central Ohio (the last week in March in latitudes farther north), the frame may be filled with fresh horse manure. (Decayed manure has stopped fermenting and loses its heat.) Before it is used the manure should be turned several times to insure even heating. Spread it in the hotbed evenly and tread it down rather firmly. A layer of straw on the manure will distribute the heat uniformly through the hotbed. Over the straw place about 4 inches of loose, light soil. Do *not* use a wet, heavy soil. If possible store the soil in the basement and make it friable by adding to it manure, leafmold or sand. Level the soil nicely and cover the bed with the sash.

MANAGEMENT. Use a thermometer to take the temperature of the soil which may run up above 100 deg. F. for a few days. When it drops to 90 deg. the seed may be sown. Mats spread over the sash will help to retain the heat on the coldest nights. For this purpose straw mats may be purchased or made, but old quilts or blankets may also be used. The sun will heat up the frames so that even in freezing weather the temperature will rise above 100 deg. unless the sash is opened a little during the day. Keeping the frame tightly closed will cause the burning of tender seedlings. When the plants need water, give it only on sunny mornings. Opening the sash to water at night causes a loss of heat; evening watering also results in the spread of mildews and other diseases.

COLD FRAMES. Coldframes are similar to hotbeds except that no pit is necessary because no manure is used. Sun shining through the sash, as we all know, will heat the frame considerably and by the use



A Forcing Box—A soap box with a pane of glass over it will retain the heat of the sun and be useful for early seed sowing

of protecting mats and blankets we can keep it quite warm even at night. The management of a coldframe is the same as that of a hotbed. Seeds sown in a frame will come into bloom several weeks earlier than those sown outdoors. Frames are useful also for carrying some annuals through the Winter. Many of the plants listed in this book are really perennials that will not stand the severe weather of northern Winters.

Again, annuals started in a sunny window are often rather soft in growth and sometimes perish when set out in the garden, especially if the weather is either hot or cold. By placing these plants in these coldframes we can gradually adapt them to outdoor conditions. The professional gardener calls this "hardening-off the plants."

FORCING BOX. A very useful "miniature coldframe" for growing a few plants is illustrated on page 32. It is an ordinary box from the grocer's covered with a pane of glass.



FORCING ANNUALS IN THE GREENHOUSE

GRADUALLY, year by year, the public is demanding a greater range of flowers from the florist. Many florists would grow these charming annuals if there was a greater demand for them. As soon as the Chrysanthemums have finished bloom, there is room for a small quantity of the various annuals.

As will be seen from the notes which follow, most annuals prefer to be grown at a low temperature so that they do not demand the best types of greenhouses for their development. It is well to keep the temperature below 50 degrees for most sorts.

Many of the sorts may be grown in the old Chrysanthemum soil to which manure, or even peat moss, is added to restore its porosity.



Left, Lupines, more valued for the greenhouse than out of doors in the hotter regions; right, Nemesis, attractive for pot plants, the colors rich and clear orange, scarlet and pink

TABLE FOR FORCING ANNUALS

Name	When to sow	Temperature for growing	Distance to plant	Soil and fertilizers	Remarks
Baby's breath (<i>Gypsophila elegans</i>)	Sow Dec. and every 10 days for succession	50°	Carry along in flats, plant 3 in. apart	Light soil	Good for cutting, especially needed in early Spring
Calendula (Pot-marigold)	Sow July. Bench Sept. Flowers Nov. Sow Sept. Flowers to follow. Mums. Bench Nov. or later for Spring bloom	45°, 50° toward Spring	12 in. x 12 in.	Abundance of manure in soil. Feed with liquid manure	Grow Ball's strain. Pinch out first bud on young plants to make others come with longer stems
Candytuft (<i>Iberis amara</i> and <i>I. umbellata</i>)	Sow Jan. or later. Flowers in early Spring	45°	Rows 12 in. apart, plants 6 in. apart	Rich soil	Sow seed directly in bench or sow in flats and transplant
China-aster (<i>Callistephus chinensis</i>)	Sow seeds Feb., March-May for succession	55° to start, keep as cool as possible during Summer	12 in. x 12 in.	Grow in soil previously used for Winter crops. There is enough food left	Water thoroughly and seldom to prevent stem-rot. Support as for Carnations
Clarkia	Sow Dec. Bench Feb.	45°-50° Will not stand heat	6 in. between plants, Rows 12 in. apart	Use shallow soil for compact plants	Good cut flowers. Grow Salmon Queen. Need staking
Cornflowers (<i>Centaurea cyanea</i>)	Sow Jan. Blooms Spring	50°	Rows 12 in. apart	Any good soil	Purchase double blue sorts
Dustymiller (<i>Centaurea candidissima</i>)	Sow Feb. for 2½-in. pots	45°-50°	Grow in pots	Any good soil	Useful edger and for porch boxes
Laceflower (<i>Trachymene coerules</i>)	Sow late Summer. Blooms Nov. Sow best Feb. Blooms May	45°-50°	Rows 12 in. apart, plants 4 in. apart	Sandy	Not easily transplanted. Carry in pots entirely or sow in bench in rows. Do not syringe. Grow on dry side to avoid damping-off
Larkspur (<i>Delphinium</i>)	Sow Oct. Blooms Feb. and March. Sow Dec. for succession. Sow Feb. Blooms May 30	45°-50°	Rows 18 in. apart, plants 4 in. apart	Any good soil	Doubles, rosy scarlet, violet, lavender, rose and white are best. Support plants

Table for Forcing Annuals—Continued

Name	When to sow	Temperature for growing	Distance to plant	Soil and fertilizers	Remarks
Lupines (<i>Lupinus mutabilis</i> in purple, blues, and pinks)	Sow Sept. in pots. Blooms March. Sow Jan. Bench Mar. Blooms May	45°-48°	Rows and plants. 12 in. to 14 in. apart	Seem to resent lime	Do not transplant, carry and shift from pots. Stake them
Mignonette (<i>Reseda odorata</i>)	Sow July, 15 pots. Bench Aug. 30 Blooms Nov. 30	45° Dislike bot- tom heat	10 in. x 12 in. Often grown in clumps of 3 or 4 plants	Solid beds. Fibrous loam, $\frac{1}{4}$ manure. Give frequent doses of liquid manure	Support as for carnations. For large spikes, disbud laterals to some extent. Sometimes young plants are pinched to induce branching. Green worms need hand-picking.
Nemesia	Sow Oct. Blooms Feb. onward	45°-50°	Good with pot cul- ture, 6 in. pots, or 4 in. apart in row	Friable loam	Pinch plants once
Pansy	Sow July. Blooms Winter	45°-48°	8 in. to 12 in.	Sandy loam	Can be sold as pot plants
Petunias	Sow Jan. and every month. Cuttings taken from doubles and desirable plants all Winter	50°-60°	Pot seedlings for Spring sales	Rich loam	When sold as pot plants, they must be in bloom. Rosy Morn and Ruffled Giant always popular
Salvia (Scarlet Sage)	Sow Feb. 1 Keep stock plants and take cuttings Jan. onward	55°-50°	Transplant to flats 1½ in. apart, then pot in 2½-in. pots	Rich soil	Popular biennial. Customers want them in bloom. Early propagated sorts sold Mothers'_Day
Salpiglossis	Sow Sept	50°	12 in. x 12 in.	Sandy loam	Flower in earliest Spring. Lovely colors. Good cut flowers
Schizanthus (Butterfly-flower)	Sow Sept., 2 or 3 seeds in pot. Blooms Feb. to May	45°	Specimen plants can be gradually shifted to even 12 in. pots	Light, heavily ma- nured	Pinch frequently, otherwise plants are spindling. Stake. Good strain of seed important
Snapdragon (Antirrhinum)	Sow April for Fall July for Winter. Sept. for May 30. Sow 60-90 days before benching	50° Night	8 in. x 10 in. Bench Sept. 15 for main Winter crop sown in July	Porous, not too rich	Rub off some sucker shoots for better quality. Tie as for Carnations. Avoid wet foliage at night, irregular watering and temperatures, lack of air to prevent rust, also dust with lime, sulphur, or Grape Dust. (See page 56 also.)

Table for Forcing Annuals—Continued

Name	When to sow	Temperature for growing	Distance to Plant	Soil and fertilizers	Remarks
Stocks (Matthiola)	Sow Aug. Bench Oct. Bloom March. Sow Dec. Bloom May	48°-50°	12 in. x 12 in.	Use Mum soil, mulch with manure during growth	Selecting forcing types. Pinch once. Support as for Carnations
Sweet Peas	Sow Sept. in pots to follow Mums. Sow in beds following Mums. Bloom Winter	50°	6 in. between plants, 15 in. or more between rows	Rich but not freshly manured soil	Purchase copy of Ball's "Sweet Peas for Profit," for full detail
Sweet-sultan (<i>Centaurea imbricatis</i>)	Sow Jan. in pots. Blooms April	50°	10 in. to 12 in. apart	Any good, well-drained soil	Avoid transplanting

In forcing annuals observe the following points:

1. Some varieties force better than others. Consult the seedsman, telling him you desire them for forcing. Perhaps he has a superior and trifle more expensive strain.

2. Have the seed sown early enough so that the plants are quite large when transplanted into their permanent quarters of the bench or greenhouse bed.

3. Maintain a low temperature.

4. Give all the light possible. Never shade the annuals for early Spring bloom.

5. Try small quantities of other annuals not suggested, as all sorts have not been tried for pot plants or for cut flower greenhouse use.

A CHAIN OF TEN LINKS

A chain is no stronger than its weakest link. There are ten links in the chain called "Success with Annuals."

1. Buy good seed. Good breeding in flowers is as important as good breeding in livestock. Do not consider the expense in buying seed of annuals, remembering that the best are none too good. Sometimes the expensive seed produces the largest and most double flowers.

2. Try some new sorts even if you do not know their names. Variety is the spice of the garden. Each year the garden lover desires to increase his circle of acquaintances in the garden.

3. Sow a space with flowers large enough to make a good eyeful. One of Nature's laws is abundance.

4. Prepare the soil thoroughly, adding some well-decayed manure. Use the spade before the rake. Some folks do not do this in sowing annuals and then wonder why the seed germination was so poor.

5. Sow the seed thinly. This is sometimes a difficult task so that good gardeners frequently mix sand with fine seed.

6. Do not sow deeply. Consider the load that the little sprout has to lift in pushing through the soil. The finest seeds should be covered not with soil, but with a piece of burlap. Just after the seed germinates, it is extremely sensitive to hot sun which may kill, or roast out, the young roots and shoots. Often one notes that the seed has germinated, but upon looking at it the next day it will be seen that every one of the tiny sprouts has died, due to neglect in giving the seed a slight and temporary shade.

7. Thin out or transplant so as to let the plants stand the proper distance apart. Crowded seedlings are tall and leggy. Do this early in their growth, so that there is no struggle for existence.

8. Cultivate. This will be easy if the plants are far enough apart.

9. Annuals stop blooming when they are allowed to ripen seed. Remove the fading flowers. Better yet, pick the flowers while fresh and enjoy them in the house.

10. Water thoroughly or not at all. Do not coax the roots to the surface by playing with the water and sprinkling. During very dry weather soak the soil; at other times, use the hoe.



THE CHARM OF ANNUALS IN THE GARDEN

An eminently successful utilization of Sweet Alyssum (see p. 54) in a delightfully planned border. There is nothing better with which to edge beds containing shrubs and herbaceous flowers of all sorts. Moreover, the dainty vivacious blossoms are in evidence the entire Summer through—and from a single planting, if the withered blooms are frequently removed.

SELECT LISTS OF ANNUALS

Annuals with Fragrance or Odor

FOR the eye there are many pleasures among our annuals but relatively few of these flowers possess the power to delight us with their sweet fragrance. It can be said that a certain flower is light pink in color, and funnel-shaped, but for kinds of fragrance there are few truly descriptive words except such comparisons as lemon-scented, clove-scented, etc. Each person must experience each odor to know what it is like. Personal tastes differ widely as to what shall be called fragrance and what constitutes an objectionable odor. The following annuals are definitely scented:

- | | |
|---|--|
| AGERATUM. Delicate | MUSKPLANT (<i>Mimulus moschata</i> .) |
| ALYSSUM, SWEET. Delicate | Individual |
| ANTIRRHINUM (Snapdragon). Delicate, unusual. | NASTURTIUM. Admired by some |
| CLEOME (Spiderflower). Some call this an odor although it is not noticeable unless the plants are brushed or bruised. | ORNAMENTAL TOBACCO (<i>Nicotiana</i> .) |
| HELIOTROPE. Generally considered the <i>par excellence</i> of fragrance. | A delight in the evening |
| HOPVINE. Tastes differ | PANSY. A refreshing fragrance |
| IBERIS (Candytuft). Faint | PETUNIA. Heavy; to some persons depressing |
| MARIGOLD. By all considered an odor; intolerable to some but unobjectionable to others | SCABIOSA. Dainty |
| MARIGOLD, POT (<i>Calendula</i>). An odor but not generally disliked. | STOCK. Unusual; fresh |
| MIGNONETTE. Called delightful by all | STOCK, VIRGINIAN. Delicate |
| | SWEET PEAS. Delicate; enjoyed by all |
| | SWEET-SULTAN (<i>Centaurea moschata</i>) |
| | Delicate |
| | VERBENA. Some sorts are Trailing-arbutus-like. |
| | VERBENA, LEMON. Really lemon-scented. A shrub. |

Evening Annuals

Never is a garden so lovely as when the sun is going below the horizon; then the light changes and illuminates each flower for a few minutes in a manner not seen during the day. Soon the twilight comes and our flowers gradually recede into nothingness, but still we linger, for then the garden is all peace and quietness. Our senses are alert, for over the garden is wafted the fragrance of certain flowers. The ornamental tobacco, the white-flowered sorts, are more luminous at twilight than

during the day, and it is then that we enjoy its fragrance. Then, also, the Petunias distill their fragrance. Lesser known but of interest is the Bartonian, a glistening gold-flowered annual. Stocks also are more fragrant at night.

These Flowers Are for Picking

Some persons have made themselves ridiculous by contending that no flowers should ever be picked, "that they are better left upon the plants than ripped from the soil only to die in the house." Such ideas are not worth consideration. We do not rip our flowers from the garden to die. We pluck them to bring Springtime and harvest-color to our tables, our windows, our friends, our churches and our many home and social occasions. If they wither it is after they have served their purpose, even as each of us must do. A flower in the hand is often worth twenty on our own or our neighbor's bush. And with many of our annuals, the more profligate we are in cutting the flowers the more abundant is our return.

The wise way to have an abundance of flowers for cutting is to sow them in rows far enough apart so that a wheel hoe may be used. When so planted they are easily cared for and armfuls may be cut with no regrets.

Some of our annuals are chiefly valued for their masses of bloom in the gardens; others, because of their long stems and good keeping qualities are useful for vases. The list below includes the outstanding sorts only. Sorts which produce salable cut flowers are starred (*). Everlastings are marked with a dagger (†).

†*ACROCLINIUM	†GRASSES, Ornamental	*POT-MARIGOLD
ARCTOTIS		†RHODANTHE
*ASTER	*GYPSOPHILA	RIBBON GRASS
BASKETFLOWER	†IMMORTELLE	SALPIGLOSSIS
BROWALLIA	*LARKSPUR	*SCABIOSA
BUTTERFLYFLOWER	LAVATERA	*SNAPDRAGON
CALLIOPSIS	LOVE-IN-A-MIST	SQUIRRELTAIL
*CARNATION	LOVE-LIES-BLEEDING	GRASS
*CENTAUREA	*LUPINES	†*STATICE
CHRYSANTHEMUM,	*MARIGOLD	*STOCKS
Annual	MATRICARIA	†*STRAWFLOWER
*COSMOS	MIGNONETTE	SUMMER-CYPRESS
DIMORPHOTHECA	NASTURTIUM	SUNFLOWER
†*EVERLASTING FLOWERS	*PANSY	*SWEET PEAS
*GAILLARDIA	PHLOX	*SWEET-SULTAN
†*GLOBE-AMARANTH	PINKS	VERBENA
GODETIA	POINSETTIA, Annual	*ZINNIAS
	POPPIES	

Annuals and Shade

As a general statement it may be said that annuals are not lovers of shade. Some succeed when grown in partial shade, however, and as there are many such nooks in our gardens the following sorts may be recommended for them:

ALYSSUM, SWEET	LUPINUS (Lupine)
ANTIRRHINUM (Snapdragon)	MIMULUS (Monkeyflower) (Musk-plant)
CENTAUREA (Sweet-sultan) (Corn-flower)	MYOSOTIS (Forget-me-not)
CHINA-ASTER	NEMOPHILA (Love-grove)
CLARKIA	NICOTIANA (Ornamental Tobacco)
CYNOGLOSSUM (Houndstongue)	PANSY
ESCHSCHOLTZIA (California-poppy)	PETUNIA
GODETIA	SCHIZANTHUS (Butterflyflower)
IMPATIENS (Balsam)	

Seashore and Mountain Annuals

No doubt, in such localities the air is more moist and cooler than it is inland; for this reason the following annuals are advised by Robert Cameron:



Left, Phacelia whitlavia, an attractive annual for mountain and seashore gardens; right, a bunch of Annual Chrysanthemums

ALONSOA (Maskflower)
 BRACHYCOME (Swan-river-daisy)
 CHRYSANTHEMUM (Annual sorts)
 CLARKIA
 COLLINSIA (Blue-eye-mary)
 COSMANTHUS
 ESCHSCHOLTZIA (California-poppy)
 GILIA
 GODETIA (Satinflower)
 HYMENOXIS
 LAYIA (Tidybits)
 LEPTOSIPHON

LUPINUS (Lupine)
 MENTZELIA (Blazing-star)
 MIMULUS (Monkeyflower)
 NEMESIA
 NEMOPHILA (Love-grove)
 NIGELLA (Love-in-a-mist)
 POPPY
 PHACELIA
 RESEDA (Mignonette)
 SAPONARIA (Calabrian Soapwort)
 SCABIOSA (Sweet Scabious)

Rockery Annuals

Most of the common annuals are a trifle too spreading in growth to be ideally adapted to a small rockery. There are some, however, which are very useful, giving a quick effect for less money expended than do perennials. Among the best for this purpose are:

ABRONIA UMBELLATA (Sandver-bena)
 AGERATUM HOUSTONIANUM (Mexican Ageratum) (Flossflower)
 ALYSSUM MARITIMUM (Sweet Alyssum)
 AMMOBIUM ALATUM (Winged Everlasting)
 ASPERULA AZUREA var. SETOSA (Blue Woodruff)
 BRACHYCOME IBERIDIFOLIA (Swan-river-daisy)
 BROWALLIA DEMISSA (Browallia)
 CAMPANULA DRABIFOLIA (ATTICA) (Greek Bellflower)
 CAMPANULA RAMOSISSIMA (LOREYI) (Bluestar Bellflower)
 DIANTHUS CHINENSIS (China Pink)
 DIMORPHOTHECA AURANTIACA (Cape-marigold)
 EMILIA FLAMMEA (Tasselflower)
 ESCHSCHOLTZIA CALIFORNICA (California-poppy).
 GAILLARDIA PICTA (Blanketflower)
 GILIA CAPITATA (Globe Gilia)
 GILIA TRICOLOR
 GYPSOPHILA ELEGANS (Common Gypsophila)
 HELIPTERUM ROSEUM (ACROCLINIUM) (Rose Everlasting)
 HUNNEMANNIA FUMARIFOLIA (Gold-encup)

IBERIS AMARA and UMBELLATA (Candytuft)
 IONOPSIDIUM ACAULE (Violet Cress)
 LIMONIUM (STATICE) SINUATUM (Sea-lavender)
 LINARIA RETICULATA (Purple-net Toadflax)
 LINUM GRANDIFLORA (Flowering Flax)
 LOBELIA ERINUS (not COMPACTA) (Edging Lobelia)
 MENTZELIA AUREA (Blazing-star)
 MESEMBRYANTHEMUM PYROPEUM (Fig-marigold)
 MIMOSA PUDICA (Sensitiveplant)
 NEMESIA STRUMOSA (Pouched Nemesis)
 NEMOPHILA INSIGNIS, N. MACULATA, Nemophila (Love-grove)
 PHACELIA CAMPANULARIA (Harebell Phacelia)
 PHACELIA WHITLAVIA (Bluebell Phacelia)
 PHLOX DRUMMONDI (Drummond Phlox)
 FORTULACA GRANDIFLORA (Sunrose) (Rosemoss)
 SANVITALIA PROCUMBENS (Sanvitalia)
 SAPONARIA CALABRICA (Calabrian Soapwort)

Rockery Annuals—Continued

SCHIZANTHUS PINNATUS (Wingleaf Butterflyflower)	TAGETES SIGNATA PUMILA (Dwarf Marigold)
SEDUM CAERULEUM (Blue Stonecrop)	THUNBERGIA ALATA (Clockvine)
SILENE ARMERIA (Sweet-william Catchfly)	TORENIA FOURNIERI (Blue Torenia)
	VERBENA ERINOIDES (Moss Verbain)

Edging Annuals

An ideal edging plant is continuous blooming, very dwarf and compact. Few sorts really meet the ideals. For variety we use a number of different annuals, the starred sorts (*) are best:

*AGERATUM (Choose a dwarf variety)	*MARIGOLD (French* and Mexican*)
*ALYSSUM, SWEET (Choose a dwarf variety)	NEMOPHILA
CALIFORNIA-POPPY	*PANSY
CALLIOPSIS (Choose a dwarf variety)	PETUNIA
CANDYTUFT	PHLOX, ANNUAL
CELOSIA (Choose dwarf sorts)	PORTULACA (Sunrose)
*DUSTY-MILLER (<i>Centaurea candidissima</i>)	POT-MARIGOLD (Calendula)
*LOBELIA ERINUS (Crystal Palace compacta or other dwarf sort)	SANVITALIA
*NASTURTIUMS (Dwarf sorts)	*SCARLET FLAX
	SNAPDRAGON, DWARF
	SWAN-RIVER-DAISY
	TORENIA
	*VERBENA



Left, *Gilia tricolor*, a diminutive annual unless grown in a cool atmosphere; right, the dainty Swan-river-daisy, an attractive, unusual edging plant



Left, the Crested Cosmos, a much needed tall annual and as well a splendid cut flower; *right*, Love-lies-bleeding or *Amaranthus caudatus*, with its tassel-like flowers

Foliage Annuals

AMARANTHUS JOSEPHS-COAT, and others	EUPHORBIA MARGINATA (Snow-on-the-mountain)
ARGEMONE (Prickly Poppy)	GRASSES, ORNAMENTAL
ARTEMISIA SACRORUM (Summer-fir)	KOCHIA
CASTOR BEAN	PERILLA
CENTAUREA CANDIDISSIMA (Dusty-miller)	VINES
	ZEA (Rainbow Corn)

Tallest Annuals

ALTHAEA (Hollyhock), Annual sorts	HIBISCUS MANIHOT (Sunset Hibiscus)
AMARANTHUS CAUDATUS and others	MARIGOLD, AFRICAN
ARTEMISIA SACRORUM (Summer-fir)	PENNISETUM (Fountain Grass)
CASTOR BEAN	SUNFLOWER
COSMOS	

For Temporary Hedges

BALSAM (Low, but formal)	HELICHRYSUM (Strawflower)
FOUNTAIN GRASS (Pennisetum)	KOCHIA
FOUR-O'CLOCK (Ideal for hedges)	SUNFLOWER, CUCUMBER

For Poor Soil

ALYSSUM, SWEET
 BALSAM
 CALIFORNIA-POPPY
 CALLIOPSIS
 CORNFLOWER
 FOUR-O'CLOCK (Godetia)
 JOSEPHS-COAT

LOVE-LIES-BLEEDING
 NASTURTIUM
 POPPY
 PORTULACA
 POT-MARIGOLD
 PRINCESFEATHER
 SPIDERFLOWER

For Hot, Dry Places

CALIFORNIA-POPPY
 DIMORPHOTHECA (Cape-marigold)
 FIG-MARIGOLD (Mesembryanthemum)
 ICEPLANT (Mesembryanthemum)

MIMOSA (Sensitiveplant)
 MORNING-GLORY, DWARF
 PERILLA
 PHLOX, ANNUAL
 PORTULACA



The Cucumber Sunflower, *Helianthus debilis*, is useful for temporary hedges and cut flowers

For Moist Places

IONOPSIDIUM (Diamondflower)

NEMOPHILA (Lovegrove)

MIMULUS (Monkeyflower)

For Window and Porch Boxes

AGERATUM

PORTULACA

ALYSSUM

SALVIA SPLENDENS (Dwarf)

BROWALLIA SPECIOSA

TAGETES SIGNATA var. PUMILA

CENTAUREA (Dusty-miller)

THUNBERGIA (Clockvine)

LOBELIA ERINUS

VERBENA

MAURANDIA

VINCA ROSEA (Madagascar Periwinkle)

NASTURTIUM (Tom Thumb)

ZINNIA HAAGEANA

PANSY

ZINNIA ELEGANS (Little Red Ridinghood)

PETUNIA

PHLOX



FAMILIES OF ANNUALS

Often when one speaks of an annual and does not know it by name, he is helped to place its characteristics by knowing its family relationships.

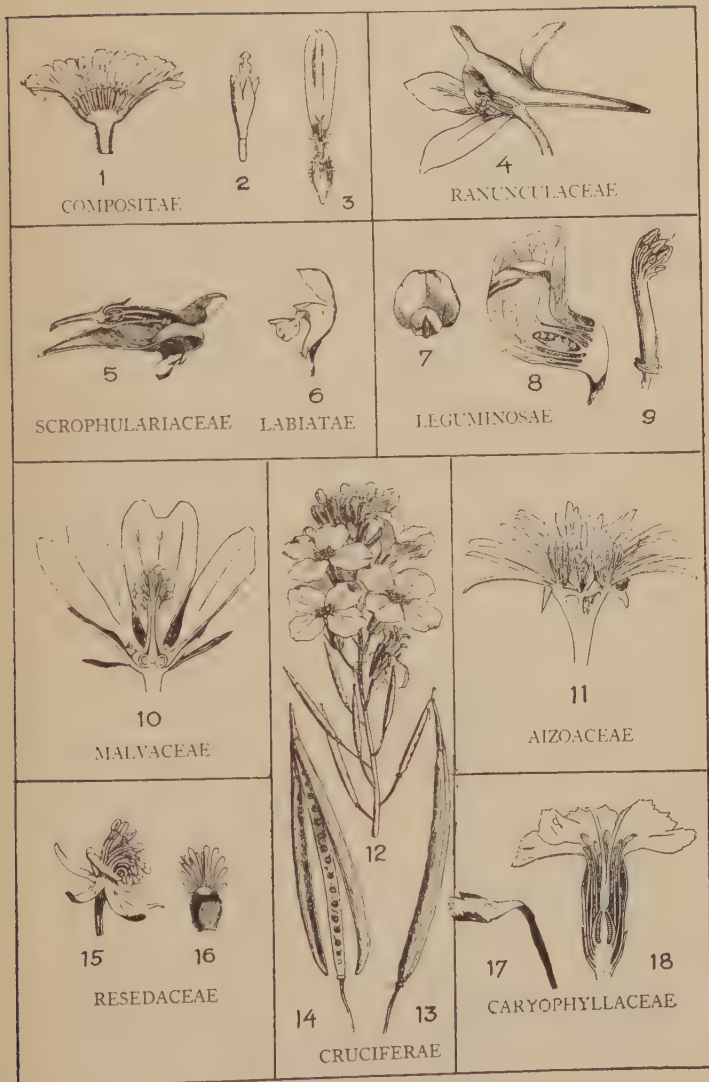
Too often one is led to relate flowers to each other by leaf, habit, or environment, but all plants are classified by their flower characteristics, mainly, they are grouped by stamen and pistil arrangement. This is the sexual system of Linnaeus as opposed to the artificial system in vogue by the early herbalists and first botanists.

The reader should refer to L. H. Bailey's "Manual of Cultivated Plants" for a botanical description of annuals, inasmuch as this book is planned to speak of them primarily as garden subjects without pretence of being botanical.

Characteristic Flowers of Various Families

(See illustration on opposite page)

1. *Compositae*. The characteristic Daisy, known as a head.
2. Disk floret of *Compositae*.
3. Ray floret of *Compositae*.
4. *Ranunculaceae*—Delphinium flower.
5. *Scrophulariaceae*—Snapdragon.
6. *Labiatae*—Two-lipped flower.
7. *Leguminosae*—Pea-like flower, upper part known as the *standard*, the two *wings* below cover the *keel*.
8. Section of a pea-like flower.
9. Stamens of Legume attached together at the base.
10. *Malvaceae*—Note the stamens are attached together and form a column.
11. *Aizoaceae*—Flower of Mesembryanthemum.
12. *Cruciferae*—Four-petaled flowers.
- 13 and 14. Seed-pods of a Crucifer splitting to reveal a membrane to which the seeds are attached.
15. *Resedaceae*—Flower of Mignonette with petals (16) removed.
17. Petal of a Pink or Dianthus.
18. *Caryophyllaceae*—Section of Dianthus.



See description on opposite page

FAMILIES OF ANNUALS

- FAMILY GRAMINEAE (Grass Family)**
 1. *Pennisetum* (Fountain Grass)
 2. *Zea* (Rainbow Corn)
 3. *Coix* (Jobs-tears)
 4. *Agrostis* (Clougrass)
 5. *Avena* (Oat)
 6. *Briza* (Quaking Grass)
 7. *Bromus* (Brome Grass)
 8. *Lagurus* (Rabbittail Grass)
 9. *Hordeum* (Squirreltail Grass)
 10. *Eragrostis* (Love Grass)
- FAMILY MORACEAE (Mulberry Family)**
 11. *Humulus* (Hop)
- FAMILY CHENOPODIACEAE (Goose-foot Family)**
 12. *Kochia* (Summer-cypress)
- FAMILY AMARANTACEAE (Amaranth Family)**
 13. *Amaranthus* (Amaranth)
 14. *Celosia* (Cockscomb)
 15. *Gomphrena* (Globe-amaranth)
- FAMILY NYCTAGINACEAE (Four-o'clock Family)**
 16. *Mirabilis* (Four-o'clock)
- FAMILY AIZOACEAE (Carpetweed Family)**
 17. *Mesembryanthemum* (Fig-mari-gold)
- FAMILY PORTULACACEAE (Purslane Family)**
 18. *Portulaca* (Portulaca)
- FAMILY CARYOPHYLLACEAE (Pink Family)**
 19. *Dianthus* (Pink).
 20. *Gypsophila* (Babysbreath)
 21. *Silene* (Catchfly)
 22. *Lychnis* (Rose-of-heaven)
- FAMILY RANUNCULACEAE (Crow-foot Family)**
 23. *Delphinium* (Larkspur)
 24. *Nigella* (Love-in-a-mist)
- FAMILY PAPAVERACEAE (Poppy Family)**
 25. *Papaver* (Poppy)
 26. *Eschscholtzia* (California-poppy)
 27. *Hunnemannia* (Goldencup)
 28. *Argemone* (Pricklepoppy)
- FAMILY CAPPARIDACEAE (Caper Family)**
 29. *Cleome* (Spiderflower)
- FAMILY CRUCIFERAE (Mustard Family)**
 30. *Alyssum* (Sweet Alyssum)
 31. *Iberis* (Candytuft)
 32. *Matthiola* (Stock)
 33. *Erysimum* (Blistercress)
 34. *Cheiranthus* (Wallflower)
 34a. *Malcomia* (Virginian-stock)
 35. *Ionopsidium* (Diamondflower)
 36. *Lunaria* (Honesty)
- FAMILY RESEDACEAE (Mignonette Family)**
 37. *Reseda* (Mignonette)
- FAMILY VIOLACEAE (Violet Family)**
 38. *Viola* (Pansy)
- FAMILY LEGUMINOSAE (Pea Family)**
 39. *Lathyrus* (Sweet Peas)
 40. *Phaseolus* (Scarlet Runner)
 41. *Dolichos* (Hyacinth-bean)
 42. *Lupinus* (Lupine)
 43. *Mimosa* (Sensitiveplant)
- FAMILY TROPÆOLACEAE (Tropæolum Family)**
 44. *Tropæolum* (Nasturtium)
- FAMILY LINACEAE (Flax Family)**
 45. *Linum* (Flax)
- FAMILY EUPHORBIACEAE (Spurge Family)**
 46. *Euphorbia* (Spurge)
 47. *Ricinus* (Castor Bean)
- FAMILY SAPINDACEAE (Soapberry Family)**
 48. *Cardiospermum* (Heartseed)
- FAMILY BALSAMINACEAE (Balsam Family)**
 49. *Impatiens* (Balsam)
- FAMILY MALVACEAE (Mallow Family)**
 50. *Lavatera* (Treemallow)
 51. *Hibiscus* (Mallow)
- FAMILY ONAGRACEAE (Evening-primrose Family)**
 52. *Clarkia*
 53. *Godetia*
 54. *Oenothera* (Evening-primrose)

Families of Annuals—Continued

- FAMILY UMBELLIFERAE (Parsley Family)
 55. *Trachymene* (Laceflower)
- FAMILY PLUMBAGINACEAE (Leadwort Family)
 56. *Limonium* (Statice)
- FAMILY CONVULVULACEAE (Morning-glory Family)
 57. *Convolvulus* (Convolvulus)
 58. *Ipomoea* (Morning-glory)
 59. *Quamoclit* (Cypressvine)
 60. *Calonyction* (Moonflower)
- FAMILY APOCYNACEAE (Dogbane Family)
 61. *Vinca* (Periwinkle)
- FAMILY POLEMONIACEAE (Phlox Family)
 62. *Phlox*
 63. *Gilia*
 64. *Cobaea*
- FAMILY HYDROPHYLLACEAE (Water-leaf Family)
 65. *Nemophila* (Love-grove)
66. *Phacelia*
- FAMILY BORAGINACEAE (Borage Family)
 67. *Cynoglossum* (Houndstongue)
- FAMILY VERBENACEAE (Vervain Family)
 68. *Verbena* (Vervain)
- FAMILY LABIATAE (Mink Family)
 69. *Salvia* (Sage)
 70. *Perilla*
- FAMILY SOLANACEAE (Nightshade Family)
 71. *Petunia*
 72. *Salpiglossis*
 73. *Nicotiana* (Tobacco)
 74. *Schizanthus* (Butterflyflower)
 74a. *Physalis* (Groundcherry)
 75. *Browallia*
 76. *Datura* (Floripondio)
- FAMILY SCROPHULARIACEAE (Figwort Family)
 77. *Maurandia*
 78. *Pentstemon* (Bearded-tongue)
 79. *Rehmannia*
 80. *Antirrhinum* (Snapdragon)
 81. *Linaria* (Toadflax)
 82. *Mimulus* (Monkeyflower)
 83. *Torenia*
 84. *Diascia*
 85. *Alonsoa* (Maskflower)
 86. *Nemesia*
 87. *Collinsia*
 87a. *Calceolaria* (Slipperwort)
- FAMILY ACANTHACEAE (Acanthus Family)
 88. *Thunbergia* (Clockvine)
- FAMILY DIPSACEAE (Teasel Family)
 89. *Scabiosa*
- FAMILY LOASACEAE (Loasa Family)
 90. *Mentzelia* (Blazing-star)
- FAMILY CUCURBITACEAE (Gourd Family)
 91. *Cucurbita*
 92. *Luffa* (Towelgourd)
 93. *Momordica* (Balsampear)
 94. *Echinocystis* (Mock Cucumber)
- FAMILY LOBELIACEAE (Lobelia Family)
 95. *Lobelia*
- FAMILY COMPOSITAE (Composite Family)
 96. *Chrysanthemum*
 97. *Artemisia* (Wormwood)
 98. *Leptosyne*
 99. *Helianthus* (Sunflower)
 100. *Zinnia*
 101. *Sanvitalia*
 102. *Cosmos*
 103. *Coreopsis* (Calliopsis)
 104. *Callistephus* (China-aster)
 105. *Brachycome* (Swan-river-daisy)
 106. *Arctotis*
 107. *Tagetes* (Marigold)
 108. *Gaillardia*
 109. *Dimorphotheca* (Cape-marigold)
 110. *Calendula* (Pot-marigold)
 111. *Senecio* (Groundsel)
 112. *Ammobium* (Winged Everlasting)
 113. *Helipterum*
 114. *Helichrysum* (Strawflower)
 115. *Xeranthemum* (Immortelle)
 116. *Ageratum*
 117. *Centaurea* (Cornflower)
 118. *Emilia* (Tasselflower)
 119. *Layia* (Tidytips)

ANNUALS OF MERIT

In the discussion of annuals which follows some names are in parentheses. They are names used commonly by gardeners and seedsmen, but are not approved by the American Joint Committee on Horticultural Nomenclature who have submitted a uniform nomenclature for all plants commonly cataloged, and grown in gardens. Revolutionary steps of this sort are slow to function; some seedsmen have not, as yet, accepted them. For this reason names not approved in "Standardized Plant Names" are designated by parentheses. All other names are the proper ones to use.

We must consider the old, likable, euphonious names in the light of nicknames, delightful, familiar but not always the proper ones.

Use the complete index on page 163 which includes all names—good and bad.

AGERATUM • Mexican *Ageratum* (Flossflower)

(A name first applied to an everlasting, meaning *not growing old*)

USE. Blue flowers are rather rare among annuals. This is one of the reasons for the great popularity of the *Ageratum houstonianum* (*mexicanum*). The flowers are dainty and feathery, often delightfully fragrant, and usually completely cover the plants. There are attractive dwarf, tufted plants as well as tall, upright growers. The dwarfer sorts appear to produce much more bloom, although the tall sorts furnish longer-stemmed cut flowers. The blue of the *Ageratum* combines well with pink in the garden. The white varieties are not as attractive as many of the other white annuals. A pink sort, cataloged as *A. las-seauxi*, is properly a species of *Eupatorium*. The growth is more dainty but the flowers are not very showy. (See illustration page 53.)

Height 6 to 24 inches.

CULTURE. The *Ageratum* is half hardy. Seed should be sown indoors any time between January and April in order to get early bloom. When sown in the open ground (which should not be done before the soil is warm) the plants do not reach their full splendor until Fall.

In order that plants may be absolutely uniform for carpet-bedding, they are generally propagated by cuttings. Bring stock plants into the greenhouse and take cuttings all through the Winter and early



Upper left, *Ageratum*, a blue flower borne in great profusion; lower left, *Blue-eyed-african-daisy*, has white blossoms with steel-blue centers; upper right, *Argemone*, has yellow flowers and spiny leaves and seed capsules; lower right, the small spray, is *Browallia alata*, a dainty garden gem, while the larger bloom is *B. speciosa*.
a useful pot plant

Spring. Such stock will be susceptible to white fly, which requires frequent fumigation with Calcium cyanide to keep it clean.

Keep the faded flowers picked, otherwise the plants will stop flowering and the clear blue effect will be marred.

ALONSOA • Maskflower

(Named for Alonzo Zanoni, Spanish official at Bogota)

Related to Snapdragons, Nemesias and Diascia, the Maskflower, *Alonsoa warscewiczii*, has tiny scarlet or cinnabar red flowers in terminal racemes. Few flowers open at one time so that this annual, though not showy, is interesting for close inspection. The plants grow about 18 inches tall, but sometimes taller. An English writer relates that after giving seed of this annual to a lady, she told him later that she liked the "Alphonso whiskey-and-soda-plant." Several other species are found in catalogs.

USES. A splendid rockery annual; a dainty cut flower for small vases and a tiny plant for intimate spots or as an edger for the border.

CULTURE. Seeds may be sown in the hotbed in March or later in the garden in May. These annuals are sensitive to the heat in the Middle West.

ALYSSUM, SWEET

(Name derived from *a*—not, *lyssa*, rage; a myth relates that the plant dispels anger)

The Sweet Alyssum is one of our most beloved white edging plants. Seed catalogs list many varieties of *Alyssum maritimum*, some being dwarf, tufted plants and others more or less trailing. The Double Sweet Alyssum is widely used by commercial florists for design work. The foliage is heavy and the flowers are more showy. A variety known as Lilac Queen bears flowers tinted lilac providing the weather is cool. (See illustration, page 39.)

USE. The various sorts are admirably adapted to rock gardens, old-fashioned gardens, pots, hanging baskets and borders around other flowers. They combine well with other flowers in attractive vase arrangements. It is well to buy seed in quantity so that a little may be sown in any space in the garden where other flowers have failed. Some seed may be even sown for Winter bloom in the large pots used for other flowers. The Double Sweet Alyssum is grown along the edge of a Carnation bench.

CULTURE. Sweet Alyssum is a hardy annual. Seed may be sown as soon as the frost has left the soil in early Spring and the plants will

bloom in less than six weeks. To have a succession of bloom, cut the plants back at frequent intervals, in which case the plants are induced to branch and to produce a constant display of bloom.

The Double Sweet Alyssum is propagated from cuttings as it produces no seed. If the seed is sown thinly, but little transplanting will be necessary, although the plants should preferably stand 6 to 8 inches apart.

AMARANTHUS • Amaranth

(Name derived from *a*—not, *mairaino*—to wither, refers to the everlasting character of the flowers)

Coarse plants, but very showy, the various sorts of *Amaranthus* may be successfully cultivated in poor soils where they thrive excellently. Some have bright red foliage, whereas others have long spikes of blood-red flowers.

SPECIES. Love-lies-bleeding. *Amaranthus caudatus* (*A. abyssinica*). Grows 3 to 5 feet tall and has long, drooping red spikes of bloom, resembling heavy chenille. Sometimes the leaves are also red. (See illustration page 45.)

Princesfeather, *A. hypochondriacus*. Grows 4 to 5 feet tall and has erect flower spikes, either green or red. The foliage is either green, golden or red. (See illustration page 63.)

Josephs-coat, *A. gangeticus* var. (*A. tricolor*). Grows 1 to 4 feet tall and has leaves blotched with bright red and yellow.

Chameleon A. (Fountainplant) *A. salicifolius*. Grows 1 to 3 feet tall and has narrow, drooping leaves often wavy margined, sometimes bronze or orange.

Moulten Fire is a Burbank variety having most brilliant red foliage. It does not grow tall but produces quite a rosette of leaves.

USES. The various sorts of *Amaranthus* are closely allied to the Pigweeds and Celosias, but the latter are daintier and have flowers of lovelier colors. At best these annuals are rather coarse and have only a limited value in the garden. They will grow in the hottest and driest locations. In rich soil the colors are not as brilliant and the plants grow foliage principally.

THE AMARANTINE ORDER. Swedish knights and Swedish ladies assembled one night in the palace of the queen for a great ball and to initiate the foundation of the Order of the Knights of the Amaranth.

Diamonds sparkled from every hem of the garment of Queen Christiania as she entered that night, attended by sixteen nobles and sixteen ladies. The ball had progressed until a late hour, for there was dancing and repartee. Suddenly Christiania stripped herself of her

diamonds and distributed them to the company. At the same time she presented the knights who would form the Order of the Knights of the Amaranth. To each she gave a sprig of Amaranth or Love-lies-bleeding, a ribbon and a medal. The flower was the emblem of incorruptibility. The medal bore an enameled Amaranth and the motto "Dolce nella memoria"—Sweet or pleasant in the memory.

CULTURE. Seed may be sown in the hotbed or window of the home in March; or, if one prefers, the sowing may be deferred until the soil is warm outdoors. Thin the plants, as they require much space.

The various sorts do not come perfectly true from seed; seed from the best plants often produce specimens with inferior flower spikes and less highly colored leaves.

ANTIRRHINUM • Snapdragon

(Greek for *like a nose*, refers to form of the flowers)

Few of our flowers are as fantastic in form as the Snapdragon, *Antirrhinum majus*. At the same time the colors attract us. There are delicate pinks, such as we find in a Rose, the yellows are like giant flowers of Toadflax, the deep maroons seem as though made of magnificent velvet. The catalogs list for our approval many other colors. In height we find a great range, some growing as tall as 3 feet, others only 8 inches. For most gardens those of medium height are best, since they produce long enough stems yet are not tall enough to demand stakes. (See illustration page 136.)

USES. Whole masses of Snapdragons are appealing, but individual plants have a charm which we cannot resist. As a cut flower the Snapdragon is very adaptable.

OUTDOOR CULTURE. Seed may be sown indoors when an early start is desired, but the Snapdragon blooms nicely when planted directly in the open soil. Transplant the seedlings to stand a foot apart. The plants are as well adapted to shady places as any other annuals.

GREENHOUSE FORCING. Drue Allman, a Snapdragon specialist, has given explicit directions in *The Florists' Review* from which are here gleaned the following points of good culture.

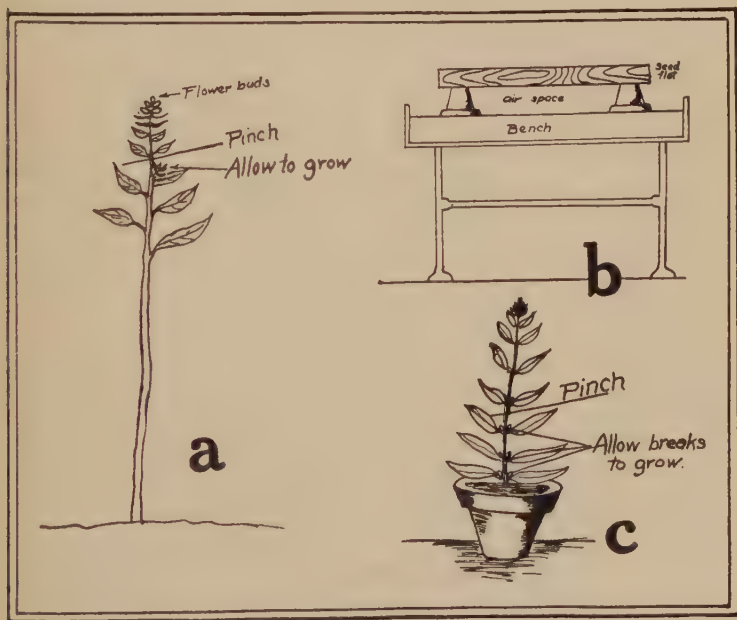
1. Have *good seed*. Carefully selected as to purity of colors.
2. *Cuttings* carry rust. They are difficult to root in Summer when the temperature is running high.
3. *Sowing Seed*. For crop of October to July sow in mid-June to mid-August. Early sowing makes large plants, but late sowing is

good for benching to follow Chrysanthemums. The blooming period can be controlled by pinching the young shoots (see illustration below), hence the date of sowing is not so important.

Select a cool, airy greenhouse, or coldframe, with a tight sash. Sow in flats of light soil to which humus or leafmold or sand has been added. Use no fresh manure.

Water thoroughly *before* sowing. Cover seed about its own thickness with light, fine soil. Press gently with a block. Elevate the flats above the level of the bench (see illustration below), allowing for air circulation, to prevent damping-off. Subsequent watering will be necessary only when the flat becomes dry below.

Seeds germinate in one or two weeks. Keep a little dry, even let them wilt a trifle. If damping-off starts, remove infested plants, water less, sift dry sand over the flats. Dust lightly with air-slaked lime, 5 parts, and sulphur, 1 part.



SNAPDRAGON CULTURE

a.—How blooming may be delayed by proper and timely removal of leaders.
 b.—The flats or pans of seed should be elevated above the bench to insure good air circulation. c.—The first pinching; allow from six to ten breaks to continue.
 From *The Florists' Review*, by Drue Allman.

4. *Benching.* When the plants are large enough to handle, and before they crowd, they should be potted in 2-inch or 2¹/₂ inch pots and grown cool. Pinch at least once, allowing from six to ten breaks to continue (see illustration, page 57). Some shoots will tend to throw early blooms, in which case they should be pinched out as shown in illustration. Sometimes the entire planting must be gone over in this manner. It is well to remember that the number of daylight hours will be decreasing, and that during November and later buds will require from six to eight weeks to open fully, depending, of course, upon the weather conditions.

Benching is done during early Fall in fresh soil, not too rich in soluble plant food. When young, the Snapdragon is not a heavy feeder, and overfeeding at this period is not only contrary to nature, but causes soft foliage, an easy prey to insects and disease. Promise yourself the pleasure of applying that top-dressing of sheep manure after the money from your first cut is in the bank. Soft growth is easily burned by sprayings and fumigations, and you will have to use them frequently to check thrips and aphids. Aim for short-jointed stock. When your neighbor boasts of taller, faster growing plants, console yourself privately. Strong fertilizer at this stage is like bootlegger's whiskey—it may cause blindness.

5. *Planting Distances.* Different varieties required different spacing, ranging from 7x8 inches to 12x12 inches, although 8x10 inches is good, 10 inches being the distance between rows.

6. *Suckers.* Constant removal of suckers in each leaf-joint is most important, especially during Fall and early Winter. The finest spikes are obtained only in this way, the plant's energy being directed toward the terminal growing points.

7. *Temperature.* Aim at 50 deg. for night temperature. Excellent results may be obtained at 45 deg., the growth being slower but more vigorous. On bright days, 65 to 70 deg. is correct.

8. *Thinning.* After the plants have occupied the benches for several months, shoots will begin to push up from the base. These are future flower spikes and should be thinned out where they appear to be crowding. Careful judgment is required, and the work should not be left to the rank and file of help. Meanwhile, some parts of the plant may become blind, particularly after a long spell of dull weather. Such blind wood should come off after it is evident that it is hopeless; this will admit light and air to the actively growing parts, and it will also facilitate working the soil, tying and the like.

9. *General Winter Care.* It goes without saying that frequent cultivation of the soil surface makes for better growth. If desired, bone-

meal and sheep manure may be worked in when the first cut is showing color, and regularly thereafter, as the plants are then in a position to use it to full advantage.

10. *Supports.* We use the Carnation method of support; *i. e.*, the tiers of wire crossed by cotton string. We use four tiers—9, 15, 23, and 36 inches above the soil surface. The Rose growers' method of a stake per plant is also good. The important point is to place supports before the plants actually need them. Some growers prefer to let this matter go until they are faced with a hopeless tangle of crooked shoots. "A tie in time saves nine" is a good greenhouse proverb.

11. *Insects.* Every grower is, doubtless, prepared to cope with aphids, thrips, worms on the foliage, and other minor insects. Spraying mixtures should be less concentrated than for many other greenhouse crops, and this applies also to fumigants. Do not use cyanide! The risk is too great. I speak from bitter experience—enough said!

12. *Rust.* Rust is best prevented by keeping air and temperature conditions as uniform as possible, especially during dull weather. Avoid sudden drafts. Foliage should always be dry at sunset. Syringe as little as possible; red spider is seldom serious upon Snapdragons, but wet foliage is. If rust does appear, some mild copper compound should be blown about the plants. It pays to examine the crop frequently; look especially on the underside of the leaves where the rust first becomes evident. Burn affected plants immediately. No variety is immune to rust, but some growers treat the crop as though no variety were susceptible.

ARCTOTIS • Bushy *Arctotis* (Blue-eyed-african-daisy)

(Name derived from *arktos*—a bear, *ous*—an ear; refers to shaggy fruit)

The lovely Daisylike flowers of *Arctotis grandis* are useful for cut flowers. The upper sides of the petals are white and the reverse lilac-blue, with the center of the flower steel-blue. The foliage is gray-green. Cut blooms last a week, closing each night and even some of the undeveloped buds will open in water. The early shutting of the flowers is a real objection when used for home decoration. The flower stems are often from 10 to 12 inches long, the plants being 2 feet tall. (See illustration, page 53.)

CULTURE. Sow the seeds either in the open ground or in a hotbed. The seeds germinate in less than a week and the plants will bloom from July until frost. Transplant the seedlings to stand 12 inches to 18 inches apart. The plants prefer full sun.



Ribbon borders leading to a terrace in a formal garden

ARGEMONE • Pricklepoppy (Mexicanpoppy) (Devils-fig)

(Name derived from *argema*, a cataract of the eye;
refers to supposed medicinal properties)

These prickly-leaved, white and yellow Poppies are very interesting to grow. The white flowered sort (*A. grandiflora*) is really a perennial, but in the colder northern states it is used as an annual although not as free flowering as the yellow species (*A. mexicana*). The latter grows 3 feet tall and has white-veined leaves. The flowers appear in early July and continue until freezing weather. (See illustration, page 53.)

Because of its beautiful variegated leaves, the yellow sort is an excellent foliage plant.

CULTURE. The seedlings are difficult to transplant although they may be lifted when very small if taken up with a ball of soil. The seeds may be sown as soon as the soil can be worked. Sow the seeds thinly so that it will not be necessary to move them. The plants will self-sow and enjoy a sandy, hot place and thrive in adversity.

ARTEMISIA • Wormwood

(Named for Artemisia, the wife of the mythological Mausolus)

One species of Artemisia, *A. sacrorum*, is annual. It is also called Russian Wormwood (Summerfir). The plants grow fully 6 feet tall. The leaves are very finely divided, lacy and are either a deep green or gray. The flowers are very minute, but in mass give a greenish yellow appearance.

USES. These plants serve as hedges, screens, backgrounds and as specimens in the garden of annuals. The cut branches blend well mixed with cut flowers, inasmuch as the dainty foliage is serviceable for this purpose.

CULTURE. This is a hardy annual and may be sown as early as desired in Spring. Where the plants self-sow, they are apt to become weedy. Each plant to develop properly needs a space of 18 inches.

BARTONIA • (Mentzelia) • (Blazing-star)

(Named for Dr. Barton, American botanist)

Were it not for the straggling growth, *Bartonia aurea* (*Mentzelia lindleyi*) would be a much more popular annual. The glistening, Poppy-like flowers are golden and are furnished with countless stamens at the center. The petals have an abrupt, sharp point. The flowers are fragrant at night. The foliage is gray, hairy, deeply lobed and sometimes appears almost like compound leaves. The plants grow 1 to 4 feet tall. (See illustration, page 26.)

USES. *Bartonias* are adapted to hot, dry places. In a rockery, its poor habit would not have as great significance as in a border.

CULTURE. Sow the seeds where they are to grow in May, as they do not bear transplanting.

BRACHYCOME • Swan-river-daisy

(Name derived from *brachus*—short, *kome*, hair; alludes to pappus of flowers)

The Swan-river-daisy, *Brachycome iberidifolia*, is a tiny, modest blue, pink, or white blossomed plant, the flowers being hardly more than a half inch in diameter. The plants grow about 10 inches tall, and are of a compact habit. One strain has attractive starlike blooms. They are useful for edgings, producing as they do a profusion of bloom throughout the Summer. The flowers may be cut for use in small vases where they combine daintily with Sweet Alyssum. (See illustration, page 44.)

CULTURE. It is wise to sow the seeds in the hotbed or a sunny window in April in order that the plants may bloom early. However, the seeds may be sown directly in the open soil. For use as edging plants, transplant the seedlings so that they will stand five or six inches apart. Cut off the old blooms as they pass. These plants succeed best in the cooler regions of the United States.

BROWALLIA • (Amethyst)

(An interesting story is told of the naming of the *Browallia*. Linnaeus was greatly pleased and elated with the ability of Bishop Browall as a botanist and accordingly named a species for him, *Browallia elata*, but at a later date he changed his opinion of the bishop and also the name of the plant to *B. demissa*)

The blue flowers of the *Browallias* have served to make them desired garden flowers and plants for pot culture.

SPECIES. *Browallia speciosa* (*major*) grows about 18 inches tall as usually grown in pots. The flowers are violet blue, $1\frac{1}{2}$ inches to 2 inches across. (See illustration, page 53.)

Browallia elata (*demissa*) (*americana*) also has violet-blue flowers but they are about half the size of the above species. A white variety is less showy but quite desirable.

Both sorts are profuse flowering; being related to *Petunias*, they resemble them in the method of flower production. When these plants are crowded they will bloom when only an inch and a half tall. They are well planted among *Calendulas*, in which combination they furnish an interesting contrast in colors.

CULTURE. Sow *B. elata* when the soil has warmed up slightly in the Spring. If the bed is protected over Winter the plants often self-



left, Princessfeather has showy, blood-red spikes and leaves; *center*, the 'Camellia-flowered Balsam is an old favorite; *right*, some of the variations noted among the Pot-marigolds or Calendulas

sow. Let the plants stand 6 inches apart. If some plants are pinched (see page 29) they will branch out nicely, remain dwarf and bloom later in the season.

Seed of *Browallia speciosa* should be planted in late Summer, sowing several seeds in a pot. This will insure Winter bloom.

CACALIA (See Emilia, page 87)

CALENDULA • Pot-marigold

(From *calendae*, the first day of the month; refers to fact that flowers open every month of the year)

When Shakespeare mentioned the Marygold he meant *Calendula officinalis*, which for wealth of bloom, is without a rival. As the plants self-sow, many persons have them in their gardens year after year. Flowers from such chance seedlings are often small and single so that some persons have tired of them, but were they to purchase seed of some of the better varieties they would experience a distinct surprise, for these double, pure gold, lemon and sulphur-colored varieties are most attractive. Especially commendable is Ball's *Calendula*, a selection by George J. Ball from a bed of Orange King; Lemon Queen is a soft yellow; Nankeen is a variegated sort with a dark center. The stems are long and strong so that a few plants will furnish a vase of flowers every day. The plants start to bloom when small and continue even after the first frosts, but in order that they shall do this the fading flowers and seed heads must be removed promptly. Few flowers pick as easily as the *Calendula*, the stems breaking off readily when pulled. (See illustration page 63.)

CULTURE. Sow the seed in the open soil in early Spring whenever it can be worked. Allow 12 inches to 15 inches between the plants. The seedlings transplant readily.

They are adapted to adverse soils but, like other flowers, copious watering is appreciated. They even tolerate some shade.

The culture in greenhouse is discussed on page 35.

CALLISTEPHUS • China-aster

(From Greek for *beautiful crown*)

As the annual Asters differ from our wild Asters and were introduced from China, they should properly be known as China-asters, *Callistephus chinensis*. From a violet colored Daisy-like flower with a yellow center, the China-aster has been bred to assume a multitude of forms and colors. Previous to 1890, the China-aster was not considered a cut flower, but was grown only for garden decoration. A few years later, with the production of the early sort, Queen-of-the

market, and the Comet and the Branching China-asters, this flower began to exhibit its rapid development, its long stems, and its large flowers.

The principal types of China-aster popular for the garden may be classified into two groups: The flat-rayed or "petal" Asters and the tubular or quilled Asters. Among the earlies are Queen-of-the-market, Early Wonder, Early Express, followed by the Royal group, then the King. Of these, the Tall Branching Asters, the Crego Giants (an improved Comet), the American Beauty, California Giants, Heart of France, and the Ray are the most popular for cut flowers, but all the other groups—dwarf and tall—are interesting for the garden. Notice illustration below, which depicts some of the distinct types. Seed catalogs list most of them in their various colors.

A new type of China-aster promises to be included in every catalog, known as Sunshine. The flowers are 4 inches to 6 inches in diameter. The centers are quilled, golden in color, merging toward the outside of the flower into white. The outer petals are mauve, dark blue, dark red, and the more or less pastel tints—coral to silver lavender.

CUT FLOWERS. As a cut flower the China-aster is highly popular and generally admired for its colors—rose-pink, white, violet, purple, red, light pink and lavender. The commercial demand is more for white and rose, the lighter pinks and purples are not as popular. It has splendid keeping qualities, but vases used for it should be thoroughly



BALL OR QUILLED



CROWN OR COCKADE

PERFECTION OR PEONY-
FLOWERED

COMET OR CREGO



BRANCHING AND VICTORIA



RAY OR KING

Types of China-asters. While all seed catalogs do not include all of them, they are well worth knowing and growing

cleaned afterward because of the odor which is usually generated by China-aster stems kept for a long time in water. It is well to remove all leaves from the part of the stem that will stand under water. A few drops of formaldehyde will keep the water from becoming foul. The stems are long and in most cases strong enough to hold the heavy flowers erect. The flowers stand rough usage, too, a quality greatly desired in blooms used commercially.

The following discussion applies to outdoor culture. Florists are growing China-asters more and more each year in greenhouses in Summer. More perfect and long stemmed flowers develop in greenhouses.

SOWING DATES. The earliest are first sown Feb. 20 in a greenhouse. Second lot sown March 1 in the greenhouse or hotbed.

Crop for late bloom May 1, in seed bed. This late sowing gives later blooms, which are more in demand and less susceptible to disease.

One ounce of seed contains 10,000-12,000 seeds; at least 5,000 plants can be expected from this amount.

SOWING PRECAUTIONS

1. Sterilize seed with Uspulin or Semesan (mentioned on page 71) to prevent stem rot and damping-off.

2. Use clean soil for seed sowing, *i.e.*, soil which you are certain does not harbor diseases. The late Geo. Arnold, originator of the branching type of China-aster, was unusually successful with China-asters of all kinds. Regarding the sowing of seeds, he writes that it is best to use a shallow box or flat. "Seedlings will grow in ordinary garden soil to a size large enough to transplant; but it is well to add one-fourth well-rotted manure and enough sand to prevent the soil from becoming hard. Fill the flat half or two-thirds full, water thoroughly, and finish filling with soil just moist enough to handle nicely. The wet soil in the bottom will furnish enough moisture so that the boxes will not have to be sprinkled until after the seedlings are up. Sow the seed in rows 2 inches apart, cover with fine sand and press firmly." Note the advice to water before sowing the seed and to cover the seed with sand.

YOUNG PLANTS. The seeds will germinate in a little over a week and the seedlings should be kept in full light, so that they may be sturdy rather than tall and leggy. When they need water give it, but do not sprinkle the plants each day, as this encourages the destructive damping-off fungus. As soon as several true leaves have grown, the seedlings should be transplanted to other boxes. Use rich soil in the bottom of the flats and ordinary soil above as further protection against disease. Set the seedlings 2 to 3 inches apart.

Crowding, too much water, or drought will check the plants, and nothing lessens the future blooming quality of the plants as much as a check. If the young plants are given a little cool air each day, or if a coldframe is available so that they may be gradually hardened off, they will stand some frost when finally set out into the garden.

PLANTING. The best soil for China-asters is a sandy loam, but a heavy soil will also produce good flowers. If the spot where they are planted has been manured and lined the previous year, it is better than to apply manure just before setting out the plants. Plants set in dry weather should have the roots puddled.

Set the plants at least a foot apart. Where space is at a premium, the plants may be set in beds and spaced 12 inches apart each way. Keep them cultivated and well watered. The feeding roots are usually near the surface of the soil so that cultivation should be shallow.

Mr. Arnold always emphasized the fact that early cultivation should be deep, the later only deep enough to keep the surface soil from baking.

SHADING. Regarding the shading of China-asters, Jas. A. Wilbens, in *The Florists' Review*, remarks that:

growing China-asters under cloth shades is a great deal like growing Asters in the greenhouse, and there is always a question as to whether or not it pays. That depends, as with all other crops, on the kind of crop you get and the kind of market you have for the crop. There is no doubt that it has its advantages. In the first place, the cloth shades the plants from the heat of the sun, which is a big advantage with China-asters, and growing them under cloth has its advantages over growing them in the greenhouse, because the former method allows more circulation and freer evaporation, reducing to a minimum the danger of damping-off and retarding the development of fungus, which is so liable to reduce the yield of a crop grown under glass.

The supports for the shade should be put up just as soon after the plants are established as convenient. Any width of bed may be covered and 1x2-inch lumber is heavy enough to use. We should advise using a frame around each bed any desired length and in width anywhere from 20 to 50 feet, with height sufficient to clear at least six feet, so that a man can walk under the frame for cultivation and for picking flowers.

The use of side muslins would depend on whether a grower is bothered by beetles or other insects (tarnished plant bug and leafhopper). In some sections you cannot grow China-asters on account of beetles. If the muslin is put on early enough and side cloths are used one will, of course, have protection from beetles, such as cannot be secured any other way. At any rate, the covering should be put on before the hot sun sets in; certainly before the buds appear.

It does not pay to go to the expense of covering plants that will not return the maximum yield for the plants that are cultivated. If an upright type of plant is used, such as Perfection, it will permit much closer spacing than if the branching type is used, and a great many more flowers can be picked to the square foot. If I were growing Asters under cover,



China-asters effectively placed along a garden walk. Note, also, the Japanese Clematis trained to form an arch

I should use the Dutch bed system and set my plants about 15 inches apart each way, with an 18-inch walk every six feet. If cross-pieces are used every four or five feet and the muslin sewn together on the edges, the first length of the muslin being attached to the frame on one side, it can then be rolled over the entire bed like an awning and rolled back again at any time desired. Of course, it would have to be put on in overlapping sections as far as the length of the piece would be concerned, so that each 12 or 15 feet of length could be rolled across separately.

The amateur can easily shade China-asters by planting them among corn or setting them in a naturally partially shaded spot, although not one in which the food and moisture is robbed by large trees.

WATERING. When a method of irrigation is provided the flowers produce longer stems and are larger. So that overhead watering is highly profitable to the commercial grower who must not let his crop be ruined by a dry season.

INSECT ENEMIES. *Tarnished plant bug.* The tarnished plant bug is so small that it would hardly seem able to do much damage, but it is the most serious China-aster pest during the hot, dry weather. It punctures the growing tips of the plants so the growth is deformed and dwarfed. The flowers open one-sided so that when "stung" they are malformed. A tobacco spray and the dusting of the plants with air-slaked lime or tobacco dust is often moderately effective in keeping the bugs in check, but as they are rapid fliers they are seldom killed or completely controlled. Mr. Arnold tells us that the bugs do not work in the shade so that sometimes the plants are not troubled when grown in the greenhouse, under trees or when protected with cheesecloth screens.

Cutworms, grasshoppers. Cutworms cut off the plant at the surface of the soil. Grasshoppers eat the flowers and foliage. Spraying with arsenate of lead will help to control them, as will also a poison bait.

Blister beetles, black beetles. One of the worst pests of the flowers is the large fat-bodied, bluish-black blister beetle. They appear about the time of the mid-season flowers. In limited quantities they can be jarred into a can of kerosene. They drop as soon as touched or disturbed. To prevent the infection becoming serious the plants may be sprayed from the start with any spray which contains pyrethrum extract. This is superior to arsenate of lead.

Root lice. Some sickly China-asters are not diseased but are affected with root lice which sap the strength of the plants, but which may sometimes be controlled by tobacco stems placed around the plants. It is not safe to plant China-asters two successive years upon soil infested with these pests.

DISEASES. *Yellows.* This is a disease which causes one-sided flowers, yellowish in color and leaves which are golden.

Yellows has proved one of the most baffling of plant diseases, it being hard to determine whether bacteria too small to be seen even through a microscope were the cause, or whether the disease was due to some disturbed physiological condition with the plant.

As the China-aster was found to be particularly susceptible to yellows, the Boyce Thompson Institute chose this plant for its series of intensive experiments, which have resulted in discovering what is believed to be the germ carrier of the disease. Dr. L. O. Kunkel, plant pathologist of the Institute, has proved that the yellows disease is always transmitted by one certain insect known as a "leafhopper." Although it is not yet known just what the leafhopper transmits or how he does it, Dr. Kunkel found that when a diseased plant and a well one were imprisoned in a small glass house the contagion did not spread from one to the other unless this particular insect was present. Other insects of similar species were tried in the glass houses; but though they might hop and scurry from the sick plant to the well one, the latter never contracted yellows until the leafhopper was introduced.

One of the striking things about the transmission of yellows is its similarity to the transmission of yellow fever and malaria in man, which is effected by means of the mosquito. The Boyce Thompson experiments in this field are being continued and it is possible that their results will throw light upon human as well as plant diseases.

From *Wisconsin Horticulturist*.

PREVENTION. (1) Plants for setting out should be grown in the house or greenhouse. The leafhopper which spreads the disease does not live indoors, nor in proximity to buildings; plants set near walls or buildings are more apt to be free from the disease than if planted in the open.

(2) The disease-free leafhoppers get the yellows virus by feeding on biennial and perennial host plants. Several weeds belonging to the genera *Sonchus*, *Erigeron* and *Chrysanthemum* are some of the wild plants in which yellows most often passes the Winter and in which it first appears in the Spring. Aster leafhoppers after feeding on such plants become disease carriers and retain the virus as long as they live. The number of leafhoppers that feed on these wild weeds must be relatively small. They transmit the disease early in the Spring to a few annuals, such as the China-aster, the Ragweed (*Ambrosia artemisiæfolia*), and the Daisy Fleabane (*Erigeron annuus*). Large numbers of young leafhoppers hatch from the eggs deposited in these diseased annuals. They feed on the diseased plants, become virus carriers, and when adult, spread yellows far and wide. There is evidence that the leafhoppers do not range in large numbers over distances of more than a mile under ordinary conditions of food supply. Severe cases of yellows are local and occur where large numbers of insects have been reared on diseased plants.

(3) After the plants are established outdoors, watch for the ones with leaves growing vertically (like Cos Lettuce leaves) as these are infected plants and should be pulled up and destroyed.

(4) Bordeaux mixture seems to repel the hoppers but its use is not of itself a guarantee of yellows free plants.

(5) The leafhopper is merely the medium through which the disease is transmitted; it carries it from a diseased plant to a healthy one; therefore if we eliminate diseased plants, which includes certain weeds, we lessen the probability of infection. China-asters grown in plots surrounded by cultivated fields are less subject to severe infection than China-asters grown in the vicinity of pastures, meadows, waste lands, or other weedy places. If we could screen the plants all through the growing season we might expect plants 100 per cent disease-free.

Stem-rot. If the season has been a wet one the stems of China-asters almost in the blooming stage often become black just at the surface of the soil. Gardens once infected often become so bad that it is best not to attempt to grow China-asters in them for several years. The spores are carried over from year to year. The scattering of wood ashes about the plants and the fumigating of the seed with a one per cent solution of formaldehyde or the use of Semesan or Uspulin have been reported as effective, but other gardeners have found no satisfactory means of control.

Rust. Orange-colored masses of rust often appear on the under-side of the leaves of plants which may thereby be either checked or stimulated into too active growth. Rusted plants of any sort are rarely curable; they must be pulled and burned. Spraying the young plants with Bordeaux mixture will prevent their infection. Note that the disease appears on the *under* side of the leaves; it is here only that spraying will be effective.

Summary of Important Points.

1. Careful culture from the time the seed is sown, prevents damping-off. 2. Checking growth causes poor flowers and rust. 3. Shading plants prevents injury from the tarnished plant bug and yellows. 4. If plants are badly diseased, burn them and [stop growing China-asters for a few years.

CANDYTUFT (See Iberis, page 96)

CELOSIA • Cockscomb

(Name derived from *kelos*, burned, referring to the color and character of the flowers)

Whoever has grown a few of the various Celosias has surely been charmed either by their beauty or their fantasy of form. Celosias are



Upper left, a flower spike of the interesting Cockscomb; upper right, the lovely white Candytuft (*Iberis amara*); lower left, *I. umbellata*, a species with flat flower heads in several colors; lower right, Woolflower blossoms resemble shaggy balls of silk or wool

sometimes confused with *Amaranthus*, which, however, is coarser and of which the colors are not so clear.

THE SORTS TO GROW. Cockscomb, *C. cristata* (*C. coccinea*). This species has huge, laterally flattened heads which in many cases really suggest the comb of a giant chanticleer. The colors range from crimson to golden yellow. Some plants often grow 2 feet tall while others are only 8 inches in height. (See illustration, page 72.)

Feather Cockscomb, *C. argentea* (*C. plumosa*). The heads resemble ostrich plumes of shining, silky texture. Those of some sorts are a clear, brilliant pink or crimson; others are like feathers of pure gold. The best sorts are the Thompson hybrids and the Pride of Castle Gould. The plants when given space to develop will grow 2½ feet to 4 feet tall.

Woolflower (*C. childsi*). Of rather recent development, the Woolflower is somewhat like the Feather Cockscomb except that the flower heads form globular crimson or orange masses resembling balls of woolen yarn or silk thread. The plants start to bloom when only several inches tall. Then branches develop, each tipped with a flower often from 4 inches to 6 inches in diameter. (See illustration, page 72.)

USES. Huge masses of *Celosias* are showy in any annual border. The dwarfier sorts may be used to edge the taller *Celosias* or other annuals. The heads may be cut and kept in water for weeks. Some persons use them as everlasting flowers and keep them in their rooms all Winter. The wavy, plummy masses of the Feather Cockscombs are magnificent when well grown.

CULTURE. Sow the seeds either in a hotbed or window in March or April, or else sow in the open ground in May. Good soil should be used in planting *Celosias* for, unlike *Amaranthus*, they respond to feeding. *Farmers' Bulletin* No. 1171 notes that transplanting into rich soil as the combs begin to form, makes the flower heads larger. The plants of the larger growing Feather Cockscombs should stand at least 2 feet apart. In some greenhouses these are grown as pot plants, in which culture they should be grown in a warm house.

CENTAUREA • Cornflower and Sweet-sultan

(Name derived from a certain *centaur* who was famous for his ability as a healer)

There is a vast array of *Centaureas*, both annuals and perennial. All of them have more or less thistle-like flowers.

SPECIES. Cornflower (Bachelor-button) (Frenchpink) (Blue-bottle) (Keiserbloom) (Ragged-sailor) (Bluet). *Centaurea cyanus*. A popular blue, purple, rose or white sort. The double varieties are



Left, 'Sweet-sultans (the large flowers) and Cornflowers or Bachelor-button; right, the Basketflower, one of the true garden aristocrats

fuller, more symmetrical and larger so that these are by far the best to cultivate. A dwarf form is cataloged. The goldfinches are fond of the seeds and make an interesting combination in colors.

Basketflower. *Centaurea americana*. This is the largest flowered sort, often 4 inches in diameter. The flowers are rosy lavender, made up of very slender florets. The involucre below the flowers have bracts which are fringed and dry. The plants grow 3 feet tall. The flowers usually close at night.

Sweet-sultan *Centaurea moschata* (*odorata*) (*suaveolens*) also *C. imperialis*. Most of the Sweet-sultans have a delicate fragrance. They are white, pink, yellow, lavender, purple and frequently have white or yellow centers. The florets are apt to be cornucopia-like, that is, funnel-shaped, often finely fringed. The flowers are 3 inches to 4 inches across and are borne upon strong stems. The bracts are often dry at the margin but they are not fringed as in *Centaurea americana*. They are said to prefer a limestone soil.

Dusty-millers. Two *Centaureas* are perennials but none too hardy. They are raised from seed each year by some florists. *C. cineraria* (*candidissima*) has broad leaf lobes and flower heads large, not hidden by the leaves, the flowers are yellow or purple. *C. gymnocarpa*

argentea) (*plumosa*), known as the Velvet Centurea, has very narrow leaf lobes and tiny flowers almost hidden by the leaves. The flowers are purple.

USES. The various sorts are good cut flowers, especially the Sweet-sultans and Cornflowers, both of which often last 10 days in water. The Basketflower closes at night.

Cornflowers are admirably combined with the Goldenwave Calliopsis. As garden subjects all sorts are dependable annuals. Travelers to Europe know why the flowers are so named because wherever they go they find the grain fields filled with Cornflowers and Corn Poppies. They are ideal buttonhole flowers and for this reason have been called Bachelor-button.

Gray foliage is always an asset to the garden, contrasting with the gay flowers, it furnishes them with a splendid background. For bedding with Geraniums and other tender greenhouse plants, the Dusty-millers have been a standby of florists for this use and for window boxes.

CULTURE. The Cornflowers and Basketflowers are of the easiest



Left, *Clarkia elegans*, a flower of real beauty from the West; right, whether for a garden effect; or for use in a vase, the Annual *Chrysanthemums* deserve more appreciation

culture. The Cornflowers are well sown in the Fall, in which case they bloom in Spring. Young plants generally Winter safely when seed is sown early in the Fall. They may be sown in Spring as soon as the soil can be worked. Allow 6 inches to 8 inches between plants and do not let them crowd. They flower in 8 weeks from seed and often self-sow, but such seedlings are often single and inferior in color and size. Succession in bloom is obtained by sowing at various times.

Basketflowers are best sown in April, and not in the Fall. They require 1 foot between the plants, inasmuch as they are larger in growth than the Cornflowers.

Sweet-sultans are best in cool climates. They should be sown where they are to grow, for they are not the easiest of seedlings to transplant. They should stand 8 inches to 12 inches apart. Young seedlings damp-off easily when crowded or given too much water. Some growers believe that a limey, loose soil is necessary for success.

Dusty-miller seed may be sown in January if a greenhouse is available. Grow them cool and use a sandy soil. Cuttings may be made, using a good, sharp knife, as they are difficult to cut without bruising.

CHINA-ASTER (See *Callistephus*, page 64)

CHRYSANTHEMUM, ANNUAL · (French *Marguerite*) (Crown-daisy)

(Name derived from *chryso*s, golden; *anthos* flower, refers to fact that some species are yellow)

The Annual Chrysanthemums are popular in England, but not well known here although they grow nicely in the United States. The most popular sorts are: *Chrysanthemum coronarium*, the Crown-daisy, or Garland C., which grows 3 feet tall and is typically yellow, either single or double. *C. carinatum* (*tricolor*) (Painted Daisy) (Tricolor Daisy) grows but 2 feet tall and is usually white with characteristic rings of purple and yellow at the center. In both sorts the leaves are rather thicker than those of most other annuals. *C. segetum*, the Corn-marigold, has bright yellow Daisies. The plants are sparse of leaves which are notched but not deeply cut as in the other two sorts. This is a wildling in the grain fields of Europe. (See illustration, page 75.)

USE. These plants provide in the garden large masses of bloom which are interesting as cut flowers.

CULTURE. The seed may be started as early as March in a hot-bed or else sown directly in the open in April. Give the plants well-enriched soil and allow at least a foot between plants. To make them branch profusely they should be pinched.

CLARKIA

(This is a native of our Western States and was first found by members of the Lewis-Clark Expedition. It was consequently named for Captain Wm. Clark)

These lovely annuals are becoming better known each year. Two species are commonly cataloged: *Clarkia elegans* and *C. pulchella*. In the latter species the petals are three-lobed at the tips. The flowers are single and double and range from deep rose through lilac and light pink to white. An outstanding characteristic is the drooping buds before they open and the fact that single blooms normally have four petals. The plants rarely grow over 2 feet tall, but bloom from July to October. (See illustration, page 75.)

USES. Clarkias are excellent for the annual border and for hanging baskets, but are adapted to the cooler regions of the United States. The stems are wiry and slender so that the plants are inclined to be almost prostrate unless they are staked. Cut just before they bloom, the flowers open nicely in water. Helen R. Albee in *Hardy Plants for Cottage Gardens*, accurately describes the appearance of the double varieties when she writes that they resemble sprays of Flowering Almond. Clarkias are often forced in the greenhouses as pot subjects or as cut flowers. (See page 35.)

CULTURE. As Clarkias are hardy, sow the seeds out of doors early in the Spring. They thrive best on the sandier soils in either full sun or partial shade. Allow 7 inches to 9 inches between plants. If the seedlings are crowded, they are inclined to damp-off readily. Some advise sowing in August and September and protecting the plants with leaves over Winter.

CLEOME • Spiderflower

Cleome spinosa (*pungens*) (*gigantea*), grows 3 to 6 feet tall and is a most interesting garden subject. The four-petaled flowers are pinkish-lavender and white and are given a peculiar, airy appearance by the long-stemmed stamens and pistils which protrude from the flowers for several inches. The plants have a peculiar odor. On page 81 is shown a flower spike and the nature of the flowers, seed pods and leaves. The stems are more crowded with flowers than shown in the sketch.

USE. Although rather coarse, Cleomes are useful for planting in beds as substitutes for shrubs or where other bold masses of ornamentals have failed. The plants are inclined to be leggy and leafless at the base so that some other annual should be planted in front of them. In a small garden two or three plants would be sufficient. The color is apt

to clash with the clear pink of some other sorts, wherefore it is often best to grow the white variety. When the stems are cut, they open flowers for a week indoors. The English find them useful for conservatory decoration.

CULTURE. Sow the seed in the open ground (preferably sandy soil) when it becomes warm in the Spring. Give each plant at least 2 feet in which to develop. If the plants show an inclination to fall over they should be staked. They generally self-sow and soon take beds to the exclusion of other flowers.

COLLINSIA (Blue-eyed-mary) (Innocence)

(Named for Zaccheus Collins, a Philadelphia botanist)

The visitor to the woods knows the Blue-eyed-mary, *Collinsia verna*, one of the daintiest of annual wild flowers. Gene Stratton-Porter also loved it, she writes:

When winter's chill has scarce left earth
And April winds blow "Hey down derry!"
Comes gaily dancing down my hill
Sweet, laughing, Blue-eyed-mary.

She wears a dress of bronzy green
Draped round her light and airy;
She lifts the loveliest face I've seen—
Brave, tender, Blue-eyed-mary.

Her eyes shine like the azure sky,
Her step light as a fairy;
Her face, no crystal drift so white,
Dear, steadfast, Blue-eyed-mary.

My hat is off to Bouncing Bet,
Gill-over-the-ground runs quite contrary,
Black-eyed-susan is my pet,
But I'm in love with Blue-eyed-mary.

It grows in moist meadows and blooms at the time of the Tulips. The lower lip is a bright blue, the upper is white, often purple.

Collinsia bicolor is a California annual that has found its way into European catalogs. In this species the lower lip is rose or violet in color and the upper white. The flowers are produced in whorls. The stems are somewhat hairy and often sticky. (See illustration, page 13.)

C. grandiflora is similar to *C. verna*, but quite branchy, the flowers being on stems no longer than the flower itself.

Uses. These annuals should be grown in large masses in woody

meadows. The seeds self-sow and coming up in October, they will bloom in April among Tulips.

CULTURE. Being hardy annuals they may be sown as early in Spring as desired.

CONVOLVULUS • Dwarf Convolvulus (Dwarf Morning-glory)

(Latin meaning *to twine*)

These plants deserve wider acquaintance. They are not strictly Morning-glories because the flowers are open all day in good weather. They also differ from the climbing sorts in that each flower is usually of three colors: The main part is either blue, pink, or purple; the center is yellow, and there is a band of white between the center and the expanded part. The specific part of the botanical name, *Convolvulus tricolor (minor)* refers to these three colors. The plants are usually only a foot tall. (Tall Morning-glories are discussed on page 159.)

USE. The Dwarf Morning-glory is excellent for a low edging mass or for hanging baskets. It cannot be used in the same way as Sweet Alyssum, because the plants are not compact, but spread over an area of several feet. They are constantly in bloom and produce an excellent effect at the base of taller plants. In wet seasons they are somewhat apt to damp-off.

CULTURE. Sow the seed in the border in May, or even earlier, and thin out the seedlings later so that they stand a foot apart. They are not readily transplanted. They delight in full sunshine.



The dwarf Morning-glory in three colors differs widely from the tall form

COREOPSIS • Calliopsis

(Named from *koreos*—bug, *opsis* like, refers to seeds, which are said to resemble a tick)

The name Calliopsis is given to the annual forms of Coreopsis. These wiry-stemmed annuals provide some of the brightest flowers of the garden in golden yellow, velvety crimson and polished mahogany.

SPECIES. *Coreopsis drummondii* (Goldenwave) has blossoms 3 inches in diameter, golden yellow with a few pencil lines of brown on each ray flower. It closely resembles the perennial sort, *C. grandiflora*,



Left, *Coreopsis drummondii*, a most useful yellow flower for cutting; right, *C. tinctoria* has tiny blossoms of gold, each marked with mahogany

which has no markings in the flowers and narrow leaves, whereas *C. drummondii* has quite oval leaflets. Height 18 inches. (See illustration above, left.)

C. tinctoria (*C. elegans*) (*C. marmorata*). There are many varieties of this brilliant species. The flowers are yellow, usually smaller than those of the first named sort, but they are marked with large blotches of mahogany, chestnut, crimson, garnet and purple. Height 1 foot to 3 feet, according to the variety. (See illustration above, right.)

USES. Calliopsis is an excellent flower for massing in an annual border. The flowers are useful for cutting because of the long stems. The dwarf, bushy varieties are good edging plants. Many varieties of *C. tinctoria* are slender in growth and may be set out among the lower growing annuals. The intensely brilliant flowers borne upon their tall, slender stems, dance in the breeze as though not supported at all.

CULTURE. Generally the seed of Calliopsis is sown in the Fall or earliest Spring where the plants are to bloom and the seedlings thinned to stand 8 inches to 12 inches apart. They prefer a sunny spot. The plants often self-sow so that a constant supply of Calliopsis is assured if given a light protection through the Winter. They are apt to bloom themselves to death, generally becoming unsightly in mid-July. It

is too much of a task to remove the seedheads of such tiny flower. If worms attack these plants at the crown, it is wise to grow them in another spot the next year.

COSMOS • (*Cosmea*) (Mexican-aster)

(The name comes from the Greek for orderliness, hence an ornament or a beautiful plant)

The Cosmos is not as impatient about coming into bloom as most annuals, but waits until it has made its growth before expending its energy in flower production. There is no other tall annual so graceful or so useful as the Cosmos. Ordinary Cosmos, *C. bipinnatus*, as well as some of the finer varieties, is so late that in some sections the frost kills the plants just when the first few flowers have opened. In the Northern States the superior variety, Lady Lenox, seldom blooms. There are, however, sorts cataloged as Extra Early Cosmos, which, though not as tall as the other sorts, bloom in July and August rather than in October, and only these should be planted for sure success.

In recent years the Double and the Crested Cosmos have been introduced. In these the flowers are frequently entirely double or else the disk-florets become tufted or crested. There are good varieties in each of the three colors—white, pink, and crimson. Early and late varieties



Left, how to tie tall plants to stakes. Note that the cord is tied to the stake first so that it cannot slip down and so it need not be pulled tight enough to choke the stem; center, Giant Spiderflower, a unique subject for use at the back for a mass; right, Cosmos, showing both the single and the crested types

are available. As yet these sorts are not thoroughly fixed as to type and many single flowers appear. The leaves of these sorts are less finely divided and may be distinguished even in the seedling stage. (See illustrations, pages 45 and 81.)

Forms of *C. sulphureus*, the Yellow Cosmos, are sometimes listed in catalogs under the name of Klondyke. This is a yellow sort and would be more cultivated did it bloom earlier. The plants are hairy and somewhat resemble a Ragweed in foliage. It is suggested that this type be started early and planted in boxes so that the roots are confined.

The Black C., *Cosmos diversifolius*, is listed in catalogs as *Bidens dahlioides*. This sort grows a foot tall and has dark velvety red flowers, tinged purple.

USES. Cosmos serves our need for a tall, beautiful annual to supply us with flowers for our homes. The stems are long and the flowers keep in water from five to seven days. No garden should be without at least a few plants. To redeem the appearance of a new shrub planting, Cosmos is most useful for the first year.

CULTURE. The late sorts, and especially the Double and Crested varieties, should be sown in a hotbed or sunny window in March. In the sections where Cosmos self-sows there is little difficulty in getting blooms. In such sections cut the plants early and remove them, otherwise they become weeds as they now are in Columbus, Ohio. Planting Cosmos in boxes will hasten its blooming season.

Some sections of the country report that mildew attacks Cosmos. Should this be troublesome the plants may be dusted with sulphur which will not discolor the foliage as would the equally effective Bordeaux mixture.

Often it is well to stake the tall plants because the brittle branches break off easily. Furthermore, plants in need of staking bear many of their flowers on crooked stems. (See illustration, page 81.)

CYNOGLOSSUM • Houndstongue

(From Greek *cuon*—dog; *glossa*—tongue, refers to papillae on seeds, which gives the texture of a tongue)

Recently a lovely blue Forget-me-not-like flower has been introduced to our gardens known as *Cynoglossum amabile* and cataloged as the Chinese Forget-me-not. It may be described as a columnar Forget-me-not, growing 2 feet tall, with long sprays of deep, clear blue flowers produced for a rather short season in early Summer.

Some authors list this as a variety of *C. furcatum*, a perennial sort from the Himalayas.

USES. It makes a splendid blue border plant, and is a rather good cut flower. Some florists have advised forcing it in the greenhouse.

CULTURE. Seed may be sown indoors in March for early bloom and in April in the garden. Cover the seeds about $\frac{1}{4}$ inch. When the plants are in their permanent beds they may stand 6 inches apart. This species shows a tendency toward being biennial, at least the plants live over Winter. The seed often self-sows and the plants may become too plentiful unless controlled. The seeds are in the nature of "sticktites." One writer says, "Beware of the seeds; I find them indoors, in my car and everywhere, because my dog acts as a carrier."

They thrive in full sun or partial shade.

DATURA • Floripondio (Trumpetflower)

These large-flowered annuals are related to the common Jimson weed. Their flowers are trumpet-shaped, white, purple, or yellow in color, and sometimes 6 inches long. *Datura fastuosa* (*cornucopia*) is the common white species. The flowers are often much doubled, in which case they are mere monstrosities. The outside of the petals is frequently washed with an objectionable purple color. The yellow sorts are, no doubt, forms of *D. chlorantha*, a tender perennial. Both of the above species are delightfully fragrant. The plants grow 2 to 3 feet tall and spread out equally wide. (See illustration, page 84.)

CULTURE. Sow the seeds indoors in April or in the border in May. Allow each plant $1\frac{1}{2}$ feet on all sides.

DELPHINIUM • Larkspur

(Named for its supposed resemblance to the dolphin)

The Annual Delphinium is one of the best known annuals, bearing long racemes of lovely colored flowers and lacy foliage. They have undergone great improvement in the color and the fullness of the spikes. The colors range from white to carmine, light pink, scarlet, light blue, and dark purple. (See illustration, page 92.)

There are two main types. Those varieties derived from *Delphinium ajacis* are known as Rocket- or Hyacinth-flowered because they produce long trusses of bloom, but few side branches. Varieties of *D. consolida* are called Field or Candelabrum Larkspur because they branch freely and bear a mass of bloom in dense clusters, not in long



Upper left, Datura, a monstrosity, but admired by some; the single sorts have greater beauty; upper right, the brilliant, tassel-like flowers of Floras-paintbrush are worth cultivating; lower left, showing the charm of the African-orange-daisy; lower right, California-poppies are a delight for hot, dry places

racemes. The double varieties are refined in form, and should be more grown. Many of the sorts grow two feet or more in height.

USES. Larkspurs provide bright, cheery masses in the border from early in the Summer until frozen in the Fall. The clear colors can be more readily obtained in the annual than in the perennial sorts. The flowers are easy to arrange gracefully in vases, and as they keep well, they are most acceptable as cut flowers. They may be forced in the greenhouse. (See page 35.)

CULTURE. Seed may be sown either early in Spring or in the Fall. The plants are perfectly hardy and often self-sow, in which case they gradually become poorer and poorer. As they grow, thin them out to stand 8 to 12 inches apart. Transplanting without a ball of earth is often unsuccessful.

DIANTHUS • China Pink

(Name derived from *Dios*—Jove; *anthos*, flower—Divine flower)

Admiration for Pinks is universal. These annual forms can be distinguished from the perennial sorts in two ways: the flowers are without fragrance, and the leaves are broader. China Pinks, *Dianthus chinensis*, are wonderfully bright in color—crimson, rose, purplish-red, maroon, salmon and lilac. The flowers are both single and double; the petals are toothed or sometimes attractively fringed, and 3 or 4 inches in diameter. The plants grow a foot tall. (See illustration, page 127.)

In the United States the annual Carnations, or Marguerite Carnations, have not been planted as much as they deserve. The range in color is wider than those grown by florists, the production of blooms is splendid. Persons desiring flowers for Summer sale would do well to refer to catalogs for these fragrant flowers. Start the seeds in January to have the greatest good from the plants.

USE. Blooming as they do from early Summer until late Fall, Pinks are a constant delight both for garden display and for cutting.

CULTURE. The China Pinks are really more than annuals and if protected with a little straw in Winter, will bloom the second year. They should be started from seed each year, however, because they cannot be depended upon to live over. The old plants will bloom before the seedlings, which should be transplanted to stand 8 to 10 inches apart. It is best to pinch them so as to produce branchy plants. A rich soil, perfect drainage and sunshine are desirable.

DIASCIA

(From the Greek *to adorn*, refers to the beautiful flowers)

A dainty, little annual, *Diascia barberae*, is not a very showy flower, but one which will appeal to the true flower lover. The flowers are rosy pink with yellow-green spots in the throat. The flowers are lipped, being related to the Snapdragons, but have two spurs on the lower lips, and are arranged in clustered racemes. It grows one foot tall and resembles *Alonsoa*, but that genus is not spurred.



Diascia barberae (Rose Twinspur)

USE. Marion Roby Case writes, "It is a dainty flower for my lady's finger bowl or to color a vase of white Gypsophila." It is ideal for the rockery, tiny and there will be a place for it in most gardens. It is grown at the Harvard Botanical Gardens.

CULTURE. Sow seeds in September if one can bloom this in the greenhouse, otherwise sow in March in a sunny window or hotbed.

DIDISCUS (See *Trachymene*, page 141)

DIMORPHOTHECA · Cape-marigold (African-orange-daisy) (Namaqualand-daisy) (Star-of-the-veldt)

(Name Greek for two-formed achenes)

The blossoms are, as indicated by one of its common names, orange Daisies but in some forms the colors are very light, grading through salmon to white. The flowers are about $2\frac{1}{2}$ inches in diameter and have a darker band of color about the central disk from which the ray florets curve upward. The plants are rather dwarf, growing but 12 to 15 inches high. The name of this annual, *Dimorphotheca aurantiaca*, is surely difficult to pronounce and has no doubt been a handicap to its culture. The various colored varieties have resulted by crossing *D. aurantiaca* and *D. pluvialis*. (See illustration, page 84.)

An Egyptian species, *D. ecklonis*, is white with a bluish center. It has been recommended that this species be taken up at the end of Summer and potted. In a greenhouse they will flower freely in late Winter. It is a splendid cut flower.

USE. The flowers may be cut for use in bowls, but close in the evening. In the garden each plant is a mat of color all season.

CULTURE. These plants like sunshine, and as they bloom when quite young there is little advantage in starting them before they can be sown out in the open border, although they bloom 6 weeks after sowing. Sow them outside in April. Thin the plants to stand a foot to 18 inches apart. The plants are inclined to bloom too freely, thereby exhausting themselves.

EMILIA (*Cacalia*) • Tasselflower (*Floras-paintbrush*)

This brilliant orange and scarlet, rarely yellow, flowered annual is worthy of a place in any garden. It is not large, but the dash of orange color it provides is noticeable. It is often admired for combining in bouquets, and is a splendid rockery subject. The flowers are actually like tassels, borne on long stems. The common sort usually grown is catalogued as both *Emilia flammea* and *Cacalia coccinea*. The plants grow 18 inches tall, and bloom from June till frost. (See illustration, page 84.)

CULTURE. This is simple. Sow the seeds in the border early in the Spring and thin the plants so that they stand 4 inches apart.

ERYSIMUM • Blistercress (*Fairy Wallflower*)

(Derived from the Greek words *to draw blisters*)

Closely related to the Wallflower, the Afghan Blistercress, *Erysimum perofskianum*, bears most brilliant orange flowers in lengthening terminal racemes. Especially admirable are these annuals in late Summer, when some other subjects are beginning to wane in beauty. *E. asperum* (*arkansanum*) is a lighter colored species, usually perennial or biennial, often confused with the above species. Superficially *Cheiranthus allioni* also is similar but does not bloom the first year from seed.

USES. Useful for borders because of its brilliant orange color, splendid for rockeries and worth cutting, the Blistercress should be more often seen in gardens.

CULTURE. Seeds may be sown indoors in March, although they bloom nicely even when planted in May in the garden. They self-sow and naturalize themselves on gravel slopes.

ESCHSCHOLTZIA • California-poppy

(Named for Dr. Eschscholtz as the result of an expedition to explore the botany of what is now California in 1815. Named by Chamisso, a companion naturalist)

The silky, golden-yellow blossoms of this, the state flower of California, are borne in profusion. Gardeners have greatly improved the plant until now we have both singles and doubles in a great range of colors—creamy-white, carmine, deep pink, orange, lemon and coral-pink. Some forms have delicately fluted petals. The California-poppy spreads over the ground, but also grows about a foot tall. The leaves are grayish-green, and add much to the simple beauty of these flowers which appear profusely from June until frost. (See illustration, page 84.)

USES. These flowers can well be planted in masses in beds or in a border; as the various colors harmonize nicely, the varieties may be mixed. If the buds are cut before they are quite open, the flowers may be used in the home to advantage. In the garden the golden and lemon varieties combine nicely with such blue materials as the Cornflower and the Larkspur.

In the *National Geographic Magazine* we read:

No state has chosen its representative flower more appropriately than California. The golden poppy, the very essence of California's sunshine, has woven its brightness into the history of the Pacific coast. During the Spring months, when it covers valley, field, and mountainside with a cloth of gold, men, women, and children make a festival of Poppy-gathering like the Japanese at cherry-blossom time.

Tradition alleges that a tilted mesa north of Pasadena when aglow with Poppies in the Spring used to serve as a beacon to coasting ships more than twenty-five miles away, a tale which is not wisely questioned by one who has never seen the glory of a golden Poppy field. Certain it is that early Spanish explorers saw some of the hillsides covered with these flowers and named the coast "The Land of Fire." It was "sacred to San Pascual," they said, "since his altar-cloth is spread upon all its hills."

CULTURE. Sow the seed in the Fall, or as early in the Spring as the soil can be worked. Thin the plants to stand eight inches apart. Do not attempt so transplant, as the California-poppy does not move readily. The old plants will self-sow if protected in the Fall.

California-poppies tolerate some shade and grow in quite dry and otherwise adverse places.

EUPHORBIA • Spurge

(Named for Euphorbus, physician to the King of Mauritania)

This is an interesting genus of plants which give off a milky juice when any part is bruised or broken. The upper leaves are in many cases

showy, while the flowers are inconspicuous. It is to this group of plants that the popular Christmas Poinsettia belongs.

SPECIES. Painted Spurge (*Mexican Fireplant*), (*Paintedleaf*), (*Annual Poinsettia*) or (*Fire-on-the-mountain*). *Euphorbia heterophylla*. This plant has deep green foliage until the middle of Summer, when the top leaves turn scarlet either all over or merely at the base. When the plants are growing well, they become much branched and exceedingly handsome. They attain a height of 2 or 3 feet.

Variegated Spurge. (*Snow-on-the-mountain*), (*Ghostweed*) *E. marginata* (*variegata*). This species is wild in the United States from the Dakotas to Texas and eastward. The leaves are oval, the upper ones being margined with white. The flowers are less showy than the leaves. The plants grow 2 to 3 feet high.

USES. Both the Mexican Fireplant and Snow-on-the-mountain are useful in a border of annuals. Their oddly colored leaves are sure to attract attention. The latter mentioned sort branches at the height of about 1½ feet, so that when it should be most showy, it is often bare at the base. However, any other annual growing about 2 feet tall may be planted in front in order to hide the bare stems. We might suggest for this French Marigolds.

CULTURE. Both species prefer heat and full sunshine, but they will grow in rather poor soil. Sow the seeds of the Mexican Fireplant when danger from frost is passed. It is best to sow 3 or 4 seeds in a place, and when the seedlings appear, to pull up all but one, as the plants need a space of 18 inches to develop in. The Snow-on-the-mountain is perfectly hardy, and the seeds may be sown very early in Spring. In some localities it behaves as a perennial and sprouts up each Spring. It also self-sows readily.

FOUR-O'CLOCK (See *Mirabilis*, page 113)

GAILLARDIA • (Blanketflower)

(Named for M. Gaillard, a French patron of Botany)

The bright, sunset colors of the Blanketflower are an asset in any garden. There are annual and perennial Gaillardias, and the various species have been blended to such a degree that it is difficult to say just which are which. Generally, the perennials are yellow and the annuals red, with tubular florets, but the various colors and forms grade into one another. (See illustration, page 90.)

The plants grow 1½ feet tall, and bloom from early Summer till late Fall, producing a wealth of long-stemmed flowers. The two

annual species from which the garden varieties are derived are: *G. amblyodon*, Maroon G., in which the rays are brownish-red throughout their length, and *G. pulchella*, Painted G., in which the rays are yellow at the tips and rosy-purple at the base. *G. picta*, Painted G., and *G. lorenziana*, Double Sunset G., are varieties of the latter species. In *G. lorenziana*, all or part of the florets are quilled.

USE. Gaillardias are excellent for beds, borders and for use as cut flowers. Especially valued when other flowers of the garden are cut down with frost.

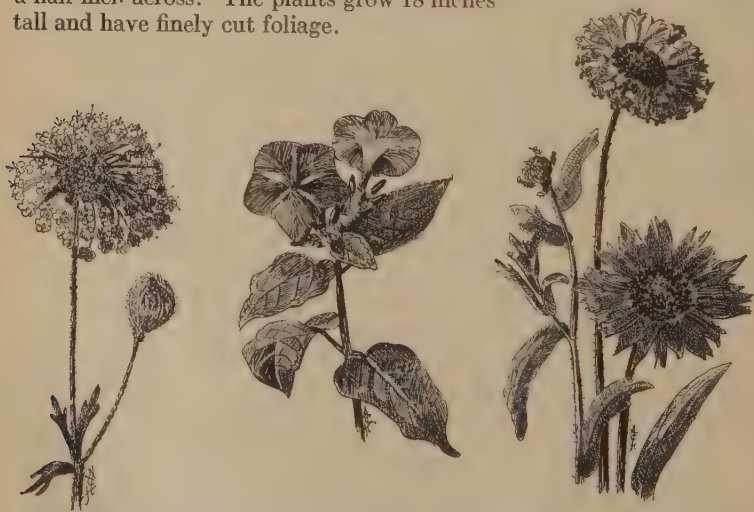
CULTURE. Gaillardias prefer full sunlight and a porous, well-drained soil. The seed may be sown early in the Spring in the border where the plants are to grow, or started in a hotbed or sunny window. Thin the plants to stand at least a foot apart.

GILIA

(Named for Philipp Salvador Gil, Spanish botanist)

The Gilias are related to Phlox and, like them, have funnel or salverform flowers.

Gilia capitata, Globe Gilia, is a blue sort with flowers in dense heads a half-inch across. The plants grow 18 inches tall and have finely cut foliage.



Left, Blue Laceflower has been much spoken of in recent years; center, Four-o'clock, a successful free bloomer with all who grow it; right, Gaillardia, the upper flower being of the *Lorenziana* type and the lower one *G. amblyodon*

Gilia coronopifolia (rubra), the Texasplume, grows 4 feet tall, has scarlet, pink and white Phlox-like flowers borne in a long, narrow cluster. Biennial treated as an annual.

Gilia tricolor, the Birdseye Gilia, grows 18 inches tall and has violet, lilac or rosy flowers with dark purple throats and yellowish tubes. (See illustration, page 44.)

USES. Both *Gilia tricolor* and *G. capitata* are splendid rockery plants; making a limited growth, they do not overpower other plants.

CULTURE. *Gilia capitata* stands hot weather better than other sorts. It is well to sow the seeds in boxes in early April, except for *G. coronopifolia*, which is truly a biennial and should be started in a greenhouse in January and planted in pots until it can be set in the open soil in May.

GODETIA • (Satinflower)

(Named for C. H. Godet, Swiss botanist)

Closely related to the Evening-primroses, the Godetias are deserving of greater attention. The flowers open wide and are of a satiny texture. Varieties may be had in rose and white, scarlet, dark crimson and pure white. Usually a deeper color is found near the center of the flower, as if painted upon the petals. (See illustration, page 92.)

Two species are common: *Godetia amoena*, known as Farewell-to-spring, grows 1 to 2 feet tall; the flowers are arranged up and down along the stems, and resemble in their double form those of the double Clarkia, but the unopened buds are erect, not drooping, and the stems are erect, not lax. *G. grandiflora*, the Whitney Godetia, the more popular species, grows only 6 to 12 inches tall, the flowers being in a compact mass, and 3 to 4 inches in diameter. They bloom from June to October.

USE. Godetias are always attractive in the garden and noticeable because of the interesting texture of the flowers. They are adapted to the cooler climates only. They may be grown in pots.

CULTURE. Sowing the seeds in a frame or sunny window will hasten the blooming time. The plants succeed in poor soil and sandy spots; in fact, it is said that they produce leaves instead of flowers when planted in rich soil.

They will also grow in partial shade. Let the plants stand at least a foot apart, for if too crowded they grow leggy, and are weakened. They self-sow in the warmer climates.



Upper left, Scarlet Flax is showy and almost glistens in the sunshine; upper right, Godetia, with its satiny petals; lower left, spikes of the Rocket-flowered Larkspur; lower right, Hunnemannia, a Poppy useful for both garden and dwelling; center, Lavatera, one of the handsomest of the Mallows for the border

GYPSOPHILA • Babysbreath

(Name derived from *gypsos*, gypsum; *phileo*, to love, meaning that it prefers limestone soil)

This is one of the smallest, daintiest flowers of the garden. Two species are commonly grown: *Gypsophila elegans* and *G. muralis*, both of which grow 1½ feet tall, and bear tiny white, pink, and rose-colored flowers upon fine, wiry, much-branched stems.

USES. In the garden, *Gypsophila* produces a misty appearance wherever it is planted. These flowers can be used to good effect planted at frequent intervals in front of and among other annuals, such as Larkspur, Poppies, and Lupines. They also make a good carpet for Gladiolus and other Summer-blooming bulbs. As cut flowers, they combine handsomely with Sweet Peas and such flowers as need a little foliage to set them off. In arranging flowers with Babysbreath, do not use too much or the result will have a "fussy" too-dressed-up appearance.



Gypsophila, a dainty, almost indispensable flower

CULTURE. The name refers to the fact that the plants prefer limestone soils. The flowers bloom in six weeks from seed sowing, and have but a short blossoming season, for after three weeks they produce their seed and stop flowering. It is well to cut the plants to the soil when the flowers are gathered. Seed should therefore be sown every two or three weeks for a succession of bloom. Some of the seed dropped by the first crop of blossoms will often flower during the season. Thin the plants to stand 8 to 12 inches apart.

HELIANTHUS • Sunflower

(From *helios*—sun; *anthos*—flower)

The Sunflower is bold, he is tall, has a lot of bluster and bravado about him, but he is not coarse; no, he does not intrude upon us. We like to have him look over our fences; we like to watch him looking down toward his feet to see how tall he has grown. If any flower deserves the name of a "Sunburst" it surely is the Sunflower. It is the state flower of Kansas.

The National Geographic Magazine has interestingly said:

When the Spaniards first visited Peru they found the Sunflower as much the national flower of the Incas as it today is the state flower of

Kansas. The Incas gave it a deeper reverence because of its resemblance to the radiant sun. In their temples the priestesses wore Sunflowers on their bosoms, carried them in lieu of tapers, and otherwise used them in their services. The Spanish invaders found many images of Sunflowers wrought with exquisite workmanship in pure virgin gold. These wonderful images, among many others, helped to excite the cupidity of the conquistadors and thus to bring about the downfall of the Incas.

The Incas of Peru and the Hurons of our own country alike were enjoying it as a cultivated crop when the white man first visited them. They used it much as the bamboo growers use the bamboo—as a Jack of all Services. Its seeds they found useful alike as food and as the raw material of a home-made hair oil; its petals were utilized in the manufacture of a yellow dye; its leaves served them as fodder and from its stalk they secured their thread.

In China its fiber is used as an adulterant of silk; in southern Russia the seeds are widely employed both in making oil and as a substitute for our peanut. The pocketful of Sunflower seed plays the same rôle in some parts of Russia as the bag of peanuts here. Much of the Sunflower oil produced in Russia is used in making soaps and candles. Europe, Asia, and Africa all cultivate this plant.

The following pretty legend indicates that the Sunflower which originated in Peru, the home of the ancient sun-worshiping Incas, is not so humble in origin as some may imagine but may justly lay claim to royal lineage:

Oh, royal Sunflower, I think I know why
 You always gaze up at the azure blue sky;
 Your bright, golden crown ever turned to the sun—
 I know how your life here on earth was begun.
 When the Sun, King of Day, first retired for the night
 Behind the horizon to rest till daylight,
 He hung his gold crown on a horn of the moon.
 But the stars danced so high they shook it off soon,
 And it fell to the earth to be gemmed by the dew.
 Oh! golden Sunflower! that lost crown is you.

—Gussie Morrow Gage.

KINDS. There are two sorts of annual Sunflowers. The seven- or eight-foot fellow is *Helianthus annuus*, of which there are many interesting forms; some are attractively doubled, like Chrysanthemums, or Asters, some are dwarf, some are ball-like, and look like golden Dahlias, while still others have been developed that are rich chestnut red either throughout or only in the center, wherein their hues resemble the colors found in the Blanketflower.

The second interesting species is known by many names, such as Miniature, Cut-and-come-again, Dwarf Branching, and Cucumber-leaved, but really is *H. debilis* (*H. cucumerifolius*). It grows three or

four feet tall and is bushy. The flowers, unlike those of the first species, are usually only 3 inches in diameter, and the yellow petals are often twisted. (See illustration, pages 46 and 136.)

USES. The uses for the tall, large sorts readily suggest themselves; there is always space for a few of them in a garden. They make attractive hedges in the distance. They screen poultry yards and as the seeds drop, they are greedily eaten by the chickens. Sunflowers are grown in the cold northwest where corn is not a success. It is used for silage. Sunflowers in the garden become quite shabby in appearance after the middle of August. The Cut-and-come-again sorts are suitable for cutting and are showy in the border.

CULTURE. The seed should be sown in the open ground when the trees are coming into leaf. A rich soil suits both sorts best. The tall forms should stand two feet apart, and the shorter ones a little closer. The Cut-and-come-again sorts commence to bloom in June and continue all Summer.

HIBISCUS (Abelmoschus) • Sunset Hibiscus (Goldenbowl H.)

(Ancient name for the Marshmallow)

Comparatively unknown to gardens, the Sunset Hibiscus, *H. manihot*, is the loveliest yellow tall annual. The plants grow 8 feet tall, the divided leaves, character of seed vessels and even the flowers remind us of the Okra. The flowers are soft yellow, 4 inches to 9 inches across, blotched with maroon. The capsules are covered with stiff hair and are long and cylindrical.

USES. Splendid for large beds or for background for other and less tall annuals. A species, sometimes cultivated, *H. trionum*, the Flower-of-an-hour, soon becomes a weed.

CULTURE. When frost comes too early the seeds do not ripen. Sow seeds indoors in individual pots, as the plants resent transplanting.

HUNNEMANNIA • Goldencup (Giant Yellow-tulip- poppy) (Bush-eschscholtzia)

(Named for John Hunnemann, an English botanist)

An artistocrat among the Poppies, the Goldencup, bears a difficult botanical name, *Hunnemannia fumariaefolia*. The buttercup-yellow flowers are like those of California-poppies except that they are more crinkled, and of greater substance, furthermore, the plants are upright. The leaves are glaucous and thick, but finely cut. The plants grow 2

feet tall and bloom in September and October. In warm regions it is a perennial. (See illustration, page 92.)

USES. Maund, an old English writer, has said that the color suggests more that of a glow-worm than the brightness of the *Eschscholtzia*. *Hunnemannias* are handsome garden subjects under any conditions. Sown in a bed with *Nigella* (p. 116), they offer a pleasing contrast. The flowers are good keepers when cut in the bud, lasting a week in the home. Unlike the California-poppies the flowers do not close at night. They are attractive combined with *Babysbreath*.

CULTURE. As with all the Poppies, *Hunnemannia* seedlings are hard to transplant except just after germinating and when taken with a ball of soil. It is best to sow the seed in May where the plants are to grow, thinning them to stand 8 to 10 inches apart. If early results are desired, start the plants in small pots and shift them carefully to larger ones when necessary. Some persons have had difficulty getting the seed to grow, but germination can usually be assured by soaking the seed. Plants withstand drought and prefer full sunlight.

IBERIS • Candytuft

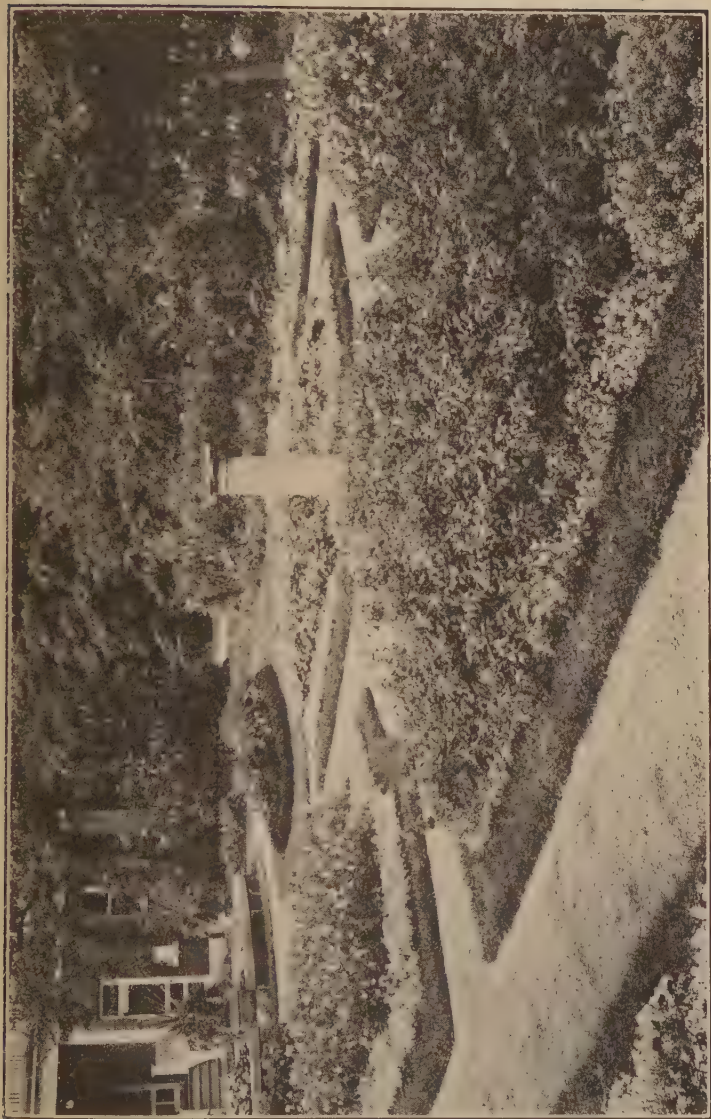
(Name from Iberia, the ancient name of Spain. The word *Candytuft* was originally *Candia tuft*, signifying the tufted plant from Candia)

The neat heads of Candytuft bloom are always greatly admired. Many persons confuse this flower with *Sweet-alyssum* which bears smaller flowers in smaller clusters and has a longer season of bloom. The white Candytuft is most often seen, but there are purple, lavender and crimson sorts.

The two species differ in the form of their clusters. *Iberis amara* is known as the Rocket and Hyacinth-flowered Candytuft because its white flowers are arranged in long clusters. In *I. umbellata*, the Purple Candytuft, which includes the colored forms, the flower heads remain umbellate, that is, short and compact. Both of the forms attain 12 inches to 18 inches in height. (See illustration, page 72.)

USES. Both forms provide superb edging plants for the garden. They bloom profusely and the fragrance of some of the sorts commends them as cut flowers.

CULTURE. In hot, dry regions Candytuft is not a complete success so that some shade is desirable. Sow the seed where it is to grow as early as possible in the Spring, or even in the Fall. Thin the plants to 6 or 8 inches apart. Fall-sown seed blooms in June; Spring-sown seed in July and August. Sowing seed successively over several weeks will insure flowers throughout the Summer.



Formal beds of Heliotrope and Petunias, edged with Sweet-alyssum, for a long season of beauty.

IMPATIENS · Balsam (Snapweeds) (Touch-me-not)

(Name from *Impatiens*, refers to elasticity of seed capsules, which when ripe spring open)

The Garden Balsam or Ladyslipper (*Impatiens balsamina*) is an old-fashioned favorite which is again coming into its own. The double and semi-double sorts, well called Camellia-flowered, are practically the only ones grown. These plants are closely related to the wild Touch-me-nots and, like them, have characteristic seed pods which open suddenly when touched. The blooms are of many delicate colors—white, flesh-pink, salmon, rose, purple and violet. The plants grow 18 inches tall and the stems are juicy and thick. (See illustration, page 63.)

USES. Balsams are rather formal plants of neat, compact habit. The flowers are produced close to the stem almost hidden among the leaves, and some gardeners remove a few of the leaves to better disclose the blossoms. The plants may be grouped in the border or used as low hedges. Some gardeners pot them for Summer porch decoration and claim they are as beautiful as Azaleas.

CULTURE. Seed may be sown indoors, as growing the plants in small pots for a few weeks will dwarf them and make them more compact. Or sow directly in the soil out of doors in May. The plants will cover 12 inches to 18 inches of space. The flowers grow nicely in well-enriched sandy soil, and prefer full sunlight. They may be transplanted when in full bloom.

**IONOPSIDIUM · Diamondflower (Carpetplant)
(Violetcress)**

(From *io*—the violet; violet-like, referring to the color of the flowers)

Related to Candytuft, *Ionopsidium acaule* is one of the most charming of the diminutive plants. It comes from Portugal. The flowers are violet, small, but borne in great numbers. The plants are not over 3 or 4 inches tall but the flower stems are long. It may not have a long season of bloom, but if the flowers are cut the plants will send up another display.

USES. The writer first saw this flower in a Columbus rock garden and so bright and truly dainty was it, that he had little rest until he had determined its name. It serves well as a ground cover.

CULTURE. It prefers rather moist and semi-shaded places. Sow the seed where they are to grow, in May.



An excellent example of the successful use of *Kochia*, or Summer-cypress. Uniformity of size and shape is a valuable characteristic of the plants

KOCHIA • Summer-cypress (Belvedere) (Mexican Fire-bush) (Burningbush)

(Named for W. D. J. Koch, German botanist and author)

Reminding one of a small, symmetrical evergreen, the Summer-cypress is commonly seen in gardens. The plants grow quickly and make an upright, compact growth, producing numerous branches covered with fine leaves. There is an objectionable feature that must be mentioned. The plants, in the Autumn, turn a bluish-red, that combines with the colors of few other plants. The plants grow 2 to 2½ feet high. *K. trichophila* rather than *K. scoparius* is the species most commonly listed in catalogs; plants of the former are oval, while those of the latter are pyramidal and more dense. (See illustration above.)

USE. Early in the season these plants make a rapid growing hedge. Often one desires such an effect if it can be produced quickly.

CULTURE. It is well to soak the seeds in warm water for a day before sowing. They may then be started indoors if the plants are wanted early, although outside sowing is usually practiced. Set the plants 2 feet apart, thus allowing their symmetrical form to develop. In the government bulletin on "Growing Annual Flowering Plants," the statement is made that these plants grow best where an electric arc lamp supplies light at night. The plants often self-sow and become

troublesome weeds unless cut to soil before they turn purple and shed their seeds. In semi-shady places they do not develop so as to make regular specimens.

LARKSPUR (See *Delphinium*, page 83)

LATHYRUS • Sweet Peas

(Ancient Greek name)

The Sweet Peas of our gardens delight us while they provoke us. We sincerely wish that they might bloom for a longer time, yet they are an unqualified joy when they are in flower.

Many thoughts arise in the minds of true Sweet Pea lovers. For instance, Helen Milman, in *My Kalendar of Country Delights*, writes: "I think the Sweet Pea is a frivolous flower and leads a butterfly's life, it wanders anywhere, and clings to anything, and has not any definite aim or ideal." And Keats when he thinks of Sweet Peas, writes:

"Here are Sweet Peas on tiptoe for a flight,
With wings of gentle flush or delicate white,
And taper fingers catching at all things
To bind them all about with tiny wings."

Another poet has written this jingle:

"Peas along the border, Peas upon the lawn,
Peas against an eastern wall to welcome in the dawn.
Peas among the Roses, Peas behind the Pinks;
Peas to catch the western glow when evening sunlight sinks.
Peas upheld with Chestnut, Peas held up with Ash;
Peas asprawl on Hazel spray, Peas on Larchen brash.
Peas on stiff unyielding wire, Peas tied up with string;
Peas upon the trelliswork where Rambler Roses swing.
Oh! Merry, merry, merry, are the gay Sweet Peas;
Plant them when and how you will, it's certain they will please."

Frankly, however, Sweet Peas cannot be planted "when and how you will," and it is to pointing the way to success in the "when and how" that the remainder of this chat on Sweet Peas will be devoted.

TYPES OF FLOWERS. There has been a gradual development of the Sweet Pea from the wild form in which the flowers were purple and small, to the modern race of ruffled sorts. The most popular today are those listed as Spencers, Waved and Orchid-flowering varieties. In these the flowers are large and frilled, three or four are borne on each stem and there is a wide range of exquisite colors. The older type, known as *Grandiflora*, includes the varieties that were seen before the year 1900. The early flowering varieties now listed are the types almost entirely grown in greenhouses today. These varieties

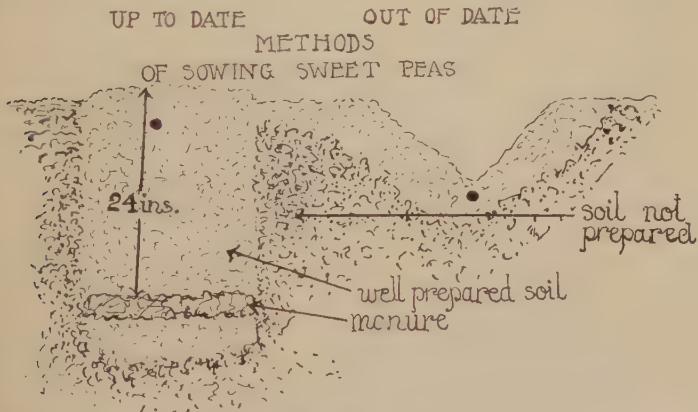
bloom two weeks earlier and have the habit of flowering while rather small, after which they branch. (See illustration, page 143.)

AUTUMN PREPARATION OF THE SOIL. Sweet Peas delight in having their roots in cool, deep soil, and for this reason it is wise to prepare the soil in the Autumn, because in the early Spring it is hardly dry enough to work. Dig a trench at least two feet deep and a foot or more wide. Place several inches of manure in the bottom, and fill in with good soil so that the filled trench is rather arched at the top. The soil will settle somewhat and anyway, we do not want these rows to be below the soil level in early Spring. Furthermore, the rows when mounded, will dry out more quickly, and permit earlier planting.

FALL PLANTING. When Sweet Peas are planted in the Fall, the flowers are produced earlier. This method is successful south of New York City on most soils, but farther north it is worth while only on well drained, sandy land. In localities where there are few alternate freezes and thaws, and the snow covers the soil most of the Winter, this method is highly recommended.

Dr. A. C. Beal, in charge of the Sweet Pea trials at Cornell University, has experimented much with Autumn-sown plants and writes, that after preparing the trench, as just described,

The soil must be treading in the trench so that it will not settle with the action of the Winter frosts. In fact, it is better to ridge the soil slightly over the trench to allow for possible settling, and for draining



A diagrammatic comparison of the old and the new, approved methods of sowing Sweet Pea seed. Well-enriched, deeply prepared soil is essential

off surface water. In this ridge, there should be made a small furrow, two inches deep. The seeds should be sown one inch apart in this furrow, and covered with two inches of soil. The row should be left slightly elevated when the planting is finished. The important point to keep in mind about Fall-planting Sweet Peas in the northern states, is to plant so late that the plants do not make any growth above ground until Spring. If the plants appear above ground they are killed by the Winter. Seeds that have only sprouted are not harmed. In central New York it is our experience that about November tenth is about the right time to sow, but, of course, this varies with the season.

After the ground freezes, a mulch of manure should be placed over the row, and if the snow remains all Winter, the conditions are very favorable. On the approach of bright, warm, sunny weather, examine the Sweet Peas, and, if they are found growing, remove the manure. It is a good plan to leave the strawy portion between the rows, or near at hand for a while, so that it may be placed over the plants during sudden cold spells.

The Fall-sown Sweet Peas begin to grow earlier than it is usually possible to plant in Spring. They develop during the cool weather, make a better root system, and are stronger than plants from Spring-sown seed. The seeds of the standard varieties are so cheap that the Fall planting of Sweet Peas is well worth trying. Should the seed perish, the rows may be replanted in the Spring.

GOOD FRIDAY SOWING. There is an old rule which says that Sweet Peas should be sown on Good Friday. This means simply that Sweet Peas may be sown as soon as the soil thaws in the early Spring, because the plants grow best during the cool, moist months.

It was formerly believed that Sweet Peas should be sown in shallow trenches six or eight inches deep, but it is now generally agreed that the row should be raked level and the seed sown only a half-inch deep. It is best to sow thinly, meaning that only enough seed should be used so that the plants will stand six inches apart. Sweet Peas may also be sown in double rows a foot apart; this will allow space for the plants to develop and will at the same time produce a large quantity of bloom.

EARLY BLOOMS FROM POT SOWINGS. Sweet Peas may be brought into bloom several weeks earlier and the plants will be better developed if started indoors, or in a hotbed. Edwin Jenkins writes, in the *American Sweet Pea Society Bulletin*:

Do not despair of raising good Sweet Peas if you are without a greenhouse, or even a coldframe; much may be accomplished by a little forethought and a little ingenuity. A flat, 24 inches long by 12 inches broad takes up but two square feet of room, and may be set in a house window. It is easily moved from place to place, holds about 100 plants in paper pots (which are four inches deep) and will give the plants plenty of room until they can be planted out. Now, these plants are enough to plant a single row 100 feet in length, or a double row 50 feet long, which is as much as many people can handle. Further, they will bloom longer and give superior flowers to any that may be planted closer; in fact, good sturdy plants set out in fairly rich soil will fill the space if planted two feet apart.

This outdoor planting must be done as early as possible, and the plants protected at night from frost. A good way to protect the plants in the row is to nail two boards together, so as to form an inverted V, and set it over the plants at night until danger from hard frost is past.

TO INSURE GERMINATION. Many Sweet Pea seeds are very hard and germinate slowly, if at all. It has been found wise to give them some sort of treatment to insure prompt sprouting. Some soak the seeds in acid for a half hour, but the simplest method is to cut off a small piece of the seed coat on the side opposite the growing point. When such seeds are sown a half-inch deep in sand, they will germinate readily because they can soak up water easily. When so treated they germinate in a week and may then be placed in small pots to grow.

Light colored seeds which usually produce the white and paler tints and the mottled seeds (usually of the lavender, blue and mauve sorts), are apt to decay when the soil conditions are not favorable. It is the red, crimson and scarlet sorts that bear the hard seeds which it is well to germinate before sowing.

SUPPORTING. As soon as the seed is sown the gardener should consider the matter of supporting the plants. When the seedlings show a tendency to produce tendrils, they want to get hold of something and should not be allowed to sprawl over the soil. No matter what method of supporting is used, small, branchy twigs should be placed near the plants, and if the stems are slow in taking to the twigs tie some of them up.

Tall brush is the ideal material for supporting the plants because of its width, and the many twigs to which the plants can fasten themselves.

Wire netting may be used; it is neat and lasts for years. Some object to it because it is difficult to clean the tendrils from it in the Fall when rolling it up for the Winter.

Stakes, eight feet long, may be driven into the row and strong strings stretched between them. This is an inexpensive method, but as the strings stretch the effect often becomes unsightly. The lower strings should be placed five inches, and the higher ones farther apart.

A common English method and one worthy of trial in this country is to sow the seeds in circles several feet in diameter. Wire netting or a teepee effect made of stakes provides a support. The clump effect thus produced must be interesting.

FERTILIZERS. If the soil is rich, little fertilizing is advisable, except a light dose of nitrate of soda, or dried blood when the stems

begin to get short. In the case of nitrate of soda, we strongly advise dissolving it in water at the rate of a tablespoonful to a gallon.

When the soil is none too good at the start it will be advisable to give a dressing of bonemeal shortly after the plants are several inches tall. Scatter the bonemeal on both sides of the row so that the soil is white and rake it in. Some specialists believe that soot dusted over the soil every ten days brightens the color of the flowers.

MULCHING. Those who wish to keep their vines blooming as long as possible may try mulching the rows with decayed leaves or straw. This keeps the soil from drying and baking. Three inches of material should be used, but no more.

When a mulch is not used, the plants must be cultivated so that at no time shall the soil be baked at the surface.

WATERING. Sweet Peas enjoy water and will thrive when given large amounts. A shallow trench hoed out six inches from the rows will be a convenient aid in watering.

PICKING THE BLOOMS. Sweet Peas must be picked often and continuously if one wishes to fully enjoy them. Neglect in this particular soon causes them to go out of bloom. The best gardeners cut the flowers rather than pull them. Buy your Sweet Pea seed and do not try to save it, for it is better to have the flowers. It is well to cut some foliage with the flowers because this acts like a light pruning, causing the plants to branch. Foliage and young shoots are also useful when arranging the flowers.

Dr. A. C. Beal writes in Reading Course Lesson 151 of the New York State College of Agriculture:

In order to have fine flowers and a long succession of bloom, it is infinitely more necessary to keep the seed pods rigorously picked off than it is to cultivate, mulch, or water the plants. The latter operations go for naught unless the pods are picked off. The writer thoroughly believes that the importance of watering has been overemphasized and that too many amateurs prefer to use the hose rather than to pick pods; then they assert that the Sweet Pea is not what it used to be, that it has lost constitution. Of course, the more highly developed the variety, the less certain it is to bear up under neglect.

(Although from some of the older varieties in the College trials, no seed pods were picked, they continued blooming profusely, while the plants of the modern, waved sorts became in most cases, completely destitute of flowers under this treatment.)

The same holds true with regard to length of stem. Some plants of Countess Spencer were treated as above in order to note the effect, and for them the season was over early in August. The lesson is that if the grower does not intend to comply with the requirements of the improved types, it is better to grow the small-flowered, precocious varieties.

INSECTS AND DISEASES. Plant lice are frequently troublesome on Sweet Peas. When this is the case spray the plants with a nicotine solution. Red spider is prevalent late in the season, and may be controlled by merely spraying with water daily. Its presence may be detected by a whitish appearance of the foliage and a webby covering.

This should not be confused with mildew, which appears as a white powdery growth on the foliage. As the mildew affects Sweet Peas only after their season of bloom is over, it is not usually serious. Mildew is controlled by dusting powdered sulphur upon the foliage. Other diseases affect Sweet Peas, but the methods for controlling them are not understood. Diseased plants should be pulled up and burned to prevent spreading the spores of the trouble.

LAYIA • Tidytops

(Named for Thomas Lay, naturalist)

A California Daisy-like annual, *Layia elegans*, has yellow flowers with the rays often white-tipped. The plants are more or less hairy throughout. It grows about 12 inches tall.

USE. The unusual white-tipped yellow Daisies serve to distinguish this annual from most others. It may be considered a garden subject or cut flower.

CULTURE. The only requirement for culture is sun; the soil may be poor. Sow the seeds in the open soil in May.

LAVATERA •

Treemallow

(Annual-mallow)

(Named for the Lavater brothers, botanists of Switzerland)

The name Mallow is applied to a number of plants of various habits, all of which bear flowers that resemble Hollyhocks. The common



Layia elegans

annual *Lavatera* is *L. trimestris* (*rosea*), with blossoms of a very bright shrimp-pink $2\frac{1}{2}$ to 3 inches in diameter. The white flowered varieties are also attractive. The plants produce flowers freely from July to September, and are $2\frac{1}{2}$ feet tall and in some places grow to 8 feet.

USES. As border subjects they are handsome, especially in the cooler, moister climates. They are also said to be good cut flowers. (See illustration, page 92.)

CULTURE. *Lavateras* prefer light soil, sun and plenty of water. Sow the seed in May, where the plants are to grow, as they do not transplant easily. Later, give each plant 2 feet of space to develop in.

LEPTOSYNE

(Greek for *slenderness*)

A Daisy-like flower related to *Coreopsis*, *Leptosyne stillmani*, grows 18 inches tall. The flowers are golden yellow, 2 inches to 3 inches across; the tips of the ray florets are 3-lobed. The foliage is very finely cut.

USES. The flowers have long stems for cutting, and last well in water.

CULTURE. Sow the seeds in a sunny window or hotbed in March or in the open soil in May. They bloom in about six weeks from seed. Hotbed-sown plants should be pinched to make them stocky.

For forcing in the greenhouse maintain a temperature of 50 deg. and sow so that the flowers may be available in earliest Spring.

LINARIA • Toadflax

(From *Linum*—flax; refers to fact that foliage is like that of flax)

The Toadflax or Butter-and-eggs, growing along railway embankments, is familiar to all. This is related to the group of annuals known as *Linaria*. Apparently the cataloged sorts are hybrids of *L. reticulata* and *L. bipartita*. The flowers are lipped, long-spurred and borne in dainty spikes. They range in color from yellow to crimson and light pink and purple, and grow 1 foot to 3 feet tall.

USES. They make but little garden display unless sown thickly, but are useful for cutting, as their tiny flowered spikes will serve as a filler among larger flowers. They should be attractive for rock garden use.

CULTURE. Sow the seeds where they are to bloom in May.

LINUM • Flowering Flax

(From *linon*, flax)

There are several annual Flaxes, including *Linum grandiflorum* (*coccineum*), the Scarlet Flax, about a foot tall, with wide-open, glossy flowers, and *L. usitatissimum*, the Flax of commerce which bears blue flowers, and grows 3 feet tall.

USES. The Flax is truly beautiful and forms clumps in the border where the glowing flowers are a delight of gracefulness. It is also an excellent edging plant and worthy of a place in a rockery. (See illustration, page 92.)

Commercial Flax has been grown for many years and has escaped from the cultivated fields of many countries, and become wild. The species name, *usitatissimum*, means most useful and refers to the various parts which have been used. It was a source of cloth before the foundation of Babylon. The Egyptian mummies are wrapped in linen made from fibers obtained from the stems of this species. In the early days of its cultivation the plants were cut and soaked in water to dissolve out the gummy substance between the bark and stems. After drying, the stems were crushed by rollers and then beaten with broad-swords. The fibers were then spun into threads. The Romans used linen for cords and sails, but not for garments. Linseed oil is made from the seeds, as well as flaxseed poultices and tea, well known home remedies. Some persons believe that a flaxseed placed in the eye will help to remove other foreign substances.

CULTURE. Seed of Flax is perfectly hardy and may be sown early in the Spring. Thin the plants to stand 8 to 12 inches apart. A succession of bloom is attained by sowing additional seed several times during the Summer.

LOBELIA

(Named for M. L'Obel, botanist and physician of King James I)

Clear blues are found among the annual Lobelias. The varieties of the Edging Lobelia, *Lobelia erinus*, the common species, are of two sorts—those which produce compact plants four inches tall, and trailing forms, which hang down for two or three feet over the sides of a pot. The flowers are tiny, deep or pale, white and blue, and are produced in great abundance. The *Lobelia tenuior* is an Australian species rather erect in growth, 12 inches to 18 inches tall. They also have deep blue flowers with white centers. The foliage of the deep blue sorts is also dark and bluish in color. (See illustration, page 108.)



An attractive edging of the dwarf, upright type of Lobelia appropriately used to border a fountain

USES. The dwarf sorts provide one of the best blue annuals for edging beds of other flowers, but care must be exercised to select good varieties from reliable seedsmen, as the commoner forms are trailing. The trailing sorts are attractive for hanging baskets, vases and window boxes.

CULTURE. The Lobelia, though moderately successful, in most parts of the United States, is at its best in the cooler regions, where the Summers are not too hot. Sow the seed in January in the greenhouse in order that the plants may be in bloom when set in the open soil. Nevertheless, the seed may be sown as late as March; it is very fine and should be carefully handled. Transplant the young plants when very small. In the garden the plants should stand 6 to 8 inches apart. Lobelias are successfully raised from slips which, if taken in the Fall, will give flowering plants for the Winter window garden.

LUPINUS • Lupine

(From *lupus*—wolf, destroying soil as does the wolf)

Lupines are attractive plants bearing Pealike flowers in whorls upon long, graceful spikes. There are annual and perennial species. The annual varieties are mainly derived from the following species: *Lupinus luteus*, the European Yellow Lupine, in which the flowers are yellow and the stems hairy; *L. hirsutus*, the European Blue Lupine,

a blue-flowered sort, very hairy; *L. hartwegi*, a two-colored species with blue and red, or blue and white flowers, and many other species differing in color and height. The Lupines bloom during the Summer, and grow 2 to 3 feet tall. The leaves are seven- to nine-parted, and are a handsome feature of the plants, the perennials have more than nine leaflets. (See illustration, page 34.)

USES. In many sections of the United States Lupines are not good because of exacting soil or climatic conditions. It is possible that they prefer acid soil and cool weather. They are very poor in Ohio, hardly ever growing more than 8 inches tall. As a border plant the Lupine is quite interesting; cut, its flowers are exquisitely suitable for graceful bowl arrangements.

CULTURE. Do not transplant Lupines. Sow them in small pots in April (see page 28), or in the open border in May. They bloom in eight weeks from seed. Let the plants stand a foot apart. Plant them in partial shade. If the soil is rich, they will grow three feet high, and need staking. Remove the fading flowers to prevent them from going to seed; this will also cause the other buds to open larger.

For commercial culture see page 36.

LYCHNIS • **Campion** (Rose-of-heaven)

(Greek for *lamp*, referring to the flame-colored flowers of some species)

The various sorts of Lych-nis are generally considered to be perennial but several are annual.

The Rose-of-heaven, *Lych-nis coelirosea*, often cataloged as *Viscaria oculata*, is a lovely little annual with crimson, blue, purple, lavender, pink or white flowers. The five petals are slightly notched and the flowers are one inch in diameter. The plants grow 1 foot tall. They are hardly known in the United States but cultivated in England.



USES. Tiny, modest flowering plants, they are useful for occasional plants at the front of the border or for the rock garden.

CULTURE. Sow the seeds in May where they are to bloom and thin the plants to stand 6 inches apart. They bloom soon after sowing.

MALCOMIA • (Virginian-stock)

(Named for Wm. Malcolm, an English nurseryman)

This old favorite of our grandmothers' gardens is often seen in places where it has self-sown for years. The common species, *Malcomia maritima*, bears four-petaled, lilac, red and white flowers somewhat resembling those of ordinary Stock. The plants grow 6 to 8 inches tall. (See illustration, page 143.)

USES. It is excellent for the rock garden, for masses in a border; it may be used as an edging plant or for naturalizing in woods.

CULTURE. The seed may be sown in the Fall in which case the plants will bloom early in the Spring. But Spring sowing will prolong the season of bloom. The common mistake in growing Virginian stock is to neglect to thin the plants so that they will stand 8 inches apart. They often self-sow.

MARIGOLD (See Tagetes, page 138)

MATTHIOLA • Stock (Gilliflower)

(Named after P. Matthioli, Italian botanist)

The delightful, and at the same time, unusual, fragrance of the Stock is one of its chief charms. But the plant is not only admired for this character; it is also a most estimable garden flower. The sorts most commonly grown are derived from *Matthiola incana*, the Ten-Weeks Stock, which species has given rise to two distinct types of plants—those which are very branching, perpetual blooming and known as Cut-and-come-again Stocks, and those which naturally produce one large truss of bloom and then branch. Of these types some grow 2 feet tall, while others are more dwarf.

Stocks may be purchased in many colors—white, rose, crimson, purple, light blue, dark blue, and sulphur-yellow, and the colors are soft, rather than brilliant. Double stocks are handsome and grow from the seed of certain single flowered plants, which in turn produce double flowers. A large percentage of such seeds will produce doubles if good strains are purchased. There are early as well as late Stocks, the latter being the better for cut flowers and the former being especially good for the garden. (See illustration, page 136.)

CULTURE. Stocks enjoy a well-enriched soil, thriving best in cool, moist weather. In some climates they apparently behave as biennials, producing a rosette of leaves but no flowers. They may live through the Winter but usually decay. When they are good, they are very good, but when they are poor, they are worthless. It is wise to start some plants early by sowing the seeds in a sunny window in March and transplanting the seedlings when large enough, to small pots. Frequent transplanting will result in compact plants. The seeds for later flowers may be sown out of doors in May.

In planting Stocks in the garden, allow at least a foot between the plants. If they are pinched, they will send up a number of excellent trusses of bloom. For this reason, it is suggested that some of the plants be pinched and others be left to develop their flowers normally. When the flowers are cut, this has the same effect as pinching and the plants tend to branch anew.

See page 37 for greenhouse culture.

MENTZELIA (See *Bartonia*, page 61)

MIGNONETTE (See *Reseda*, page 130)

MESEMBRYANTHEMUM • Iceplant or Figmarigold

(Name derived from *mesembria*, mid-day; *anthemon*, a flower, refers to fact that flowers open in full sunlight)

The Iceplant (*M. crystallinum*) is the most commonly grown representative of this genus. It is a curious plant with thick leaves covered with glistening dots, or icelike globules. The flowers are white or light rose, but not showy. The plants are trailing and seldom more than 6 inches tall. (See illustration, page 11.)

There are many other Figmarigolds, of which *M. pyropeum* (*lineare*) (cataloged as *M. tricolor*) is a most attractive annual. The flowers are crimson, pink, and white, and $1\frac{1}{2}$ or 2 inches across. The plants are trailing and grow 6 inches tall. These are not annuals but are often treated as such.

USES. These plants are useful for rough spots in the garden, where the soil is dry and the sun is very hot. They are used for edging.

CULTURE. The seeds should be sown either indoors in April, or in the open border when the soil is warm. They require very little water.

MIMOSA • Sensitiveplant (Humbleplant)(Name from *mimos*, a mimic; imitating animal behavior)

Sensitive plants are grown not for their beauty, but for their interesting qualities. The many-parted, Locustlike leaves are sensitive; when touched the leaflets fold together, and finally the entire petiole droops. After a few hours the leaves assume their normal appearance.

The plants are natives of dry regions where, when a drought is felt, the leaves fold and thereby reduce the leaf surface exposed to the drying effect of the air. The common sensitive plant is *Mimosa pudica*, a thorny sort, bearing fuzzy pink flowers. Either dry or cold conditions cause its leaves to close.



Sensitiveplant leaves; at the left before, and at the right after being touched

CULTURE. Sow the seeds in shallow boxes and transplant in late May to a hot, dry place in the border.

MIMULUS • (Monkeyflower)(Name from *Mimo*, an ape, refers to gaping mouth of flower)

The flowers of this interesting genus are curiously shaped and spotted with contrasting colors. Those generally seen are bright yellow, spotted with maroon, red or orange. *Mimulus moschatus* is the Muskplant, so-called because of its musk-scented leaves. It is really a trailing perennial with yellow flowers, but it can be grown as an annual. *M. luteus*, the Golden Monkeyflower, variously called in catalogs, *tigrinus*, *cardinalis*, and *grandiflorus*, is a large-flowered sort with yellow, gaudily-spotted blossoms. Both sorts grow a foot tall.



The Monkeyflower, though bizarre, is well worth planting

USES. The Monkeyflower is grown for its brilliance of color, which is attractive. They are effectively planted in hanging baskets or in the border where the soil is moist.

Apparently many of the Muskplants grown lack the characteristic odor of musk. The Monkeyflowers are adapted to cool regions and may be grown in pots in cool greenhouses.

CULTURE. As the seed is very small, the plants had best be started indoors fairly early in the Spring. Keep the seed pans constantly moist but not wet. Transplant the seedlings when quite small, in tiny clumps and thin them out later. Transplant to the open only when the soil is warm. These plants prefer partial shade and, as stated above, like moisture. Some housewives who grow the Muskplant for Winter bloom, stand the pots in a dish of water.

The Monkeyflowers may be increased by cuttings. Take slips of the young growth and place several in a small pot of sandy soil. Shortly they will root. When they begin to crowd they may be repotted into larger pots.

MIRABILIS · Four-o'clock (Marvel-of-peru)

(Name from *mirabilis*, wonderful, or some say shortened form of *Admirabilis*)

The Four-o'clocks are well known and were favorites with our grandmothers, just as they are admired by us today. The flowers remain closed until late afternoon, hence the name Four-o'clock. They are white, crimson, violet, yellow and striped. The plants are 2 feet tall, and during a season produce hundreds of blooms, starting in late Summer and continuing until cut down by frost. (See illustration, page 90.)

USES. Four-o'clocks are useful for temporary hedges between the flower and vegetable gardens. A few plants will fill the bare spaces found, in so many cases, between the house foundations and the walk leading to the backyard. In beds by themselves they are also attractive, but the range of colors is peculiar and difficult to combine with some other annuals.

CULTURE. The plants often self-sow. Otherwise sow the seeds thinly in the row where they are to grow as soon as danger from frost is passed, or else start them earlier in a sunny window or hotbed, and plant out when the trees are in leaf, setting them 1 to 2 feet apart. The plants produce rather tuberous roots which may be dug and stored over Winter, and produce plants of great size when set out in Spring. Seldom do Four-o'clocks come perfectly true from seed but vary greatly, often several colors of bloom are found on the same plant.

NEMESIA

(Name found in Dioscorides, an early botanical writer)

The English have admired and grown *Nemesias* in their cool climate and all have admired them in places where they grow well. At Ohio State University we have grown them in the greenhouse but find that our Summers are too hot and dry, except when they are started in the Winter and set into the garden for Spring bloom, in which case they do not suffer from heat.

Nemesia strumosa has open mouth-shaped flowers densely clustered in racemes. The brilliant colors—yellow, cream, orange, crimson, rose, and derivations of them. (See illustration, page 34.)

USES. The *Nemesia* is perhaps as much at home in the rockery as any other garden spot. In cool climates, it is an unexcelled plant for beds but in Central and Southern U. S., where Summers are hot and dry it is not characteristic.

CULTURE. The seeds may be sown in the Winter if greenhouse space is available, the plants then come into bloom in early Spring. They may be cut back and placed in the garden where by gradually hardening-off they may be set as early as April and give a great show of color before many perennials are in bloom. Seeds may be sown in March, in which case the plants bloom later. Greenhouse culture is discussed on page 36.

NEMOPHILA (Love-grove) • (Baby-blue-eyes)
(California-bluebell)

(Name means *grove-loving*)

These small, dainty plants from California are of a spreading habit and the leaves are pale green, deeply cut and slightly hairy. In *Nemophila menziesi* var. *insignis*, Baby-blue-eyes, the flowers are cup-shaped, blue or white. The tips of the petals of *N. maculata*, the Spotted *Nemophila*, are spotted with deep purple, the rest being white. Most other *Nemophilas* found in the catalogs are varieties of these two species. The plants grow a foot tall and are profuse bloomers throughout the Summer.

Nemophilas differ from *Phacelias*, to which they are related, by having reflexed or spreading appendages in the sinuses of the calyx.

USES. These charming little annuals are excellent for edging beds, or for informal low groups in the border. Their long season of bloom commends them for wider cultivation. They are best grown in partial

shade and in the moister soils. They are rather intolerant of heat. They are excellent pot plants for the greenhouse and clumps in the rockery are pleasing.

CULTURE. The seed may be sown in April in the open border where the plants are to grow. They should be thinned to stand at least 6 inches apart. It is said that these flowers do best in soil which is not very rich, and in the cooler regions of the country.

NICOTIANA · Flowering Tobacco

(Named for Jean Nicot, French consul to Portugal, who first presented tobacco to the courts of Portugal and France)

The evening fragrance of the flowers of this plant is most delightful. Besides this, the flowers are attractive in form and color, which ranges from pure and creamy white, to deep pink, violet, crimson, and flesh. The shades are of the same soft tones as are found in the best Stocks. The flowers are borne in great profusion upon flower stems at least 3 feet tall. The leaves are usually abundant, and form a cluster about the base of the plants.



Flowering Tobacco, this illustration showing *Nicotiana affinis* as it appears in the daytime with its flowers closed

Species. Jasmine Tobacco. *Nicotiana alata* var. *affinis*. This sort has large fragrant flowers open at night but closing in cloudy weather. The leaves extend down to make winged branches.

Nicotiana sylvestris. The flowers are drooping, in short head-like clusters, corolla entirely white unlike *N. alata*, which is yellowish outside. They remain open all day.

Sander T. *Nicotiana sanderae* (*N. forgeliana* x *N. alata*) is the red-flowered sort with the five lobes of the corolla rounded, not acutely pointed.

USES. Few writers can resist advising amateur gardeners to plant masses of these flowers where the evening breezes will blow their fragrance toward a porch. They are slender in growth, and are seen to advantage when given a background of taller annuals. Combined with *Cosmos*, they make a good bed.

CULTURE. The seed is very tiny and should be sown carefully. As the seedlings make a slow growth under cold conditions, it is wise to start them in the hotbed or sunny window. The soil should be finely pulverized and well enriched in order to produce tall plants and large flowers. The plants often self-sow, so that the plants practically become perennials.



The blue *Nigella* flowers with their lacy collars are always interesting

Nicotianas grow in sun or partial shade, and are not particular as to the soil.

NIGELLA • Love-in-a-mist
(Devil-in-the-bush) (Lady-in-the-green) (Fennelflower) (Jack-in-the-bush)

(Named from Latin for *little black*, alluding to the seeds)

The fantastic names given to *Nigella*—which alone tempt anyone to grow it—have reference to the character of the flowers and leaves. The single, or double, blue or white flowers are furnished with a lace collar of green fernlike foliage. The common species is *Nigella damascena*, the favorite variety being *Miss Jekyll*. The plants grow 1½ feet tall and usually bloom constantly from early Summer till Fall. The flowers are

followed by attractive, inflated and horned seed pods an inch in diameter.

Relative to the name Devil-in-a-bush, Mr. Breck writes that the name is appropriate because "that evil character is supposed to hide himself as much as possible from public view."

USES. The airy grace lent by these flowers is delightful in the garden. For cut flowers they are also valuable, for they may be arranged easily in low vases. The more double flowers are preferable to the singles. Planted with California-poppies, *Nigella* provides a pleasing contrast in colors.

CULTURE. Seeds may be sown in Autumn for these annuals are perfectly hardy and usually self-sow. Spring-sown seeds bloom later and extend the flowering period. There is little need for sowing indoors, however, as the plants bloom when quite small. Thin the plants to stand 8 to 12 inches apart. In saving one's own seed keep only that from the double flowers.

OENOTHERA • Evening-primrose, Sundrops

There are many biennial and perennial *Oenotheras* but several are rather popular annuals.

Oenothera drummondii. Drummond Evening-primrose. This annual, 1 to 2 feet tall, has bright yellow flowers. Like all Evening-primroses it is four-petaled.

Oenothera America is a large-flowered type with white flowers which turn pinkish.

USE. They are attractive border plants for sunny locations, although they apparently stand some shade.

CULTURE. Sow the seeds early in the Spring in the open soil. Let the plants stand 8 to 12 inches apart.

PANSY

The Pansy, it would seem, is one of the most alluring of all garden flowers. Its little faces make most of us laugh when we look at them. The English have given the Pansy many nicknames, such as Call-me-to-you, Love-true, Three-faces-under-a-hood, Pink-eyed-John, Tickle-my-fancy, Bird's-eye, Jump-up-and-kiss-me, God-father, God-mother, Love-in-idleness, Kiss-me-in-the-buttery, Rob-run-the-street, and Heartsease. With such names, it is not strange that the French call it *pensée*, for this word means thoughts. Yet with all the Pansies' charms, there are some persons who do not grow them!



Above, a glorious mass of Pansies that surely makes one want to grow flowers like them. *Below*, Petunias, whose blooms appear in greater profusion and last longer than those of most other annuals

USES. Why speak of the use of Pansies? Everyone knows their garden value and their interest when arranged in a low bowl for the table. Plant a few *Browallias* among the Pansies and note the charming effect. Pansies are also interesting when planted in a bed of such bulbs as Tulips, Snowdrops, Crocus and Narcissi. Just as the bulbs finish blooming the Pansies will be at their best. (See illustration, page 118.)

CULTURE. The best, largest, most attractively colored Pansies are the only ones we should grow, although seed of such sorts is a little more expensive than ordinary Pansy seed.

Late Summer sowing. When Pansy seed is sown in August, the plants will bloom in the early Spring. E. J. Steele, a Pansy breeder of wide reputation, suggests the following points about sowing seed:

1. Have your soil perfectly clean, free of weeds and trash, and pulverized to a depth of six or more inches.
2. On the level surface spread evenly a layer of pulverized manure, barnyard scrapings preferred, to a depth of at least one inch.
3. Overlay manure with one-half inch of the best soil you have, thoroughly pulverized. To prevent damping-off it is wise to treat the soil with Uspulin or Semesan, see page 26.
4. Roll or rake down and tamp surface true and smooth.
5. Use the hose freely and soak down the bed several inches.
6. Sow your seed in drills or broadcast.
7. Cover as lightly as possible. Sand, peat moss and soil are used. Peat moss retains the moisture very well.
8. Use a fine spray of water to moisten surface.
9. Allowing plenty of ventilation, keep your beds moist, quite moist, but not soaking wet, until plants come up.
10. Unbleached sheeting of the cheapest grade is good to retain moisture. As soon as the plants begin to come through freely, the sheeting should be removed permanently, and on the tops of the beds may be sifted a thin layer of barnyard scrapings.

Spring sowing. If Pansy seed is sown in early Spring the plants will bloom in the Summer. The flowers will be small at first, but will become larger as the weather gets cooler.

A few facts about Pansy seed. Pansy seed is good for only nine months; old seed will not germinate properly.

When the temperature is above 70 deg., Pansy seed will not germinate. It prefers cool weather.

There are 25,000 to 28,000 seeds in an ounce, which will sow 300 feet of drill. The late Mr. Chas. Frost, a specialist, says that growers allow 1 ounce of seed for 4000 plants, but that with care 7000 to 8000 plants should be raised. We seldom get a high percentage of germination.

Generally the largest flowers of the rarest colors are found upon plants which have grown from seed that germinates slowly.

The better varieties are shy seed bearers and for this reason good Pansy seed is always expensive.

Transplanting. The tiny Pansy plants should be transplanted when they have produced a few of their true leaves. Set them 4 inches apart in a coldframe if the seeds were sown in the Fall. Seeds sown in the open in Spring should be transplanted from the seed bed directly to the garden border. All too frequently transplanting results in smaller flowers.

Protection for Winter. After the ground is thoroughly frozen, the Pansies should receive some protection. Note that the advice is to protect them *after* the soil has frozen, the object being to keep it frozen and to prevent the plants from being heaved by alternate freezing and thawing. The best protection is afforded by using straw and a hotbed sash, but many persons do not grow enough Pansies to make them think that they can afford the hotbed sash. As a matter of fact, it is not necessary, but useful. If sash is not used, cover the plants with some fine tree branches, and upon them throw some coarse garden litter or leaves. The branches will prevent rain and snow from packing the leaves too tightly over the plants. Water standing upon Pansies through the Winter will be fatal to them.

Blooming Plants. Pansies are not hot weather plants, but if one removes all the flowers as fast as they fade so that seeding is prevented, they will bloom rather well in half-shaded places. They will not succeed at all, however, in dense shade.

When the plants show a tendency to produce runners, and the branches become long, they may be cut back, whereupon the plant will branch out and produce another crop of bloom.

Commercial Shipping of Plants. Mr. Steele remarks relative to successful packing and shipping:

For the commercial grower of seedlings the successful shipping of them is second in importance to growing them.

1. Do not send out any plants with less than five leaves, not counting the two initial leaves, first, because they do not stand up for a long-distance trip, and, second, even if they do arrive in fair condition, they lack the strength of larger plants and, therefore, do not grow to the satisfaction of the buyer. Yes, you can sell cheap, attenuated seedlings, but you cannot build up a business by so doing.

2. Do not ship seedlings over 500 miles until they are hardened off by a few chilly days and frosty nights. It means almost certain loss.

3. Do not bunch your plants in paper wrappings for distances over 200 miles. Ordinary paper used in that way gathers moisture, a fermentation starts, the plants heat and then rot.

4. Do not pack your plants in horizontal layers.

5. Do not crowd your plants by packing tightly.

6. Do not allow moisture on plants and little, if any, on roots.

Plants, when lifted for shipping, should be cool, with no moisture on the tops. Even if roots are wet, they should be thinly spread in a dry, cool place, turning them over gently and shaking roots entirely free from dirt. When tops are dry and roots are taking on a light color from drying and when, in handling the plants, the dirt no longer clings to your fingers, your plants are ready for packing.

Use a light, strong box from four to five inches high. We buy spruce box ends, half inch thick and of above width, in strips and cut them to proper size of box made to hold, say, 1000 plants. All sides, tops and bottoms are three-sixteenths inch, mill cut to twenty-six inches. Thus we have a box four to five inches high, twelve inches wide, more or less, and twenty-six inches long, holding about 1000 plants and made as tight and snug as possible.

Line the box first with double newspaper and then with oil paper, well up on sides and ends. It is now ready for the moss.

The greatest possible danger lies in improper moistening of moss. It should never be wet, but always moist—barely moist.

With cool moss, no lumps, carefully carpet bottom of box one or more inches in thickness, sufficient to bring plants in vertical layers, so that tops will reach to within half-inch of top when nailed on, and for ventilation.

Overlay the top of the box with oil paper, about four inches wider than width of box; next a double newspaper of same width, both cut long enough to nail down under top, which should come flush with sides to make shipment snug and strengthen top. Do not crowd your plants, and do not leave them loose enough so they will scramble. After your plants are packed, pick up your box with a jerk endwise, and if your plants move back and forth slightly, your packing is well done. Midway between the ends, run a stout, strong cord twice around box, and snub up tightly, tying on the corner of box and leaving long enough ends to tie on your shipping tag. Always mail your invoice under separate cover, to serve notice that shipment is on the way. Your shipment is then ready to travel across the continent safely.

For economy and quick transit, parcel post is recommended.

PAPAYER • Poppy

(*Papaver*, the old Latin name)

Why should we extol the Poppy? Why not? It was the favorite of the old gardens; it is the same choice flower in the newest gardens today. Dancing upon long, wiry stems, the single blooms remind us of hoop-petticoats of silk. The doubles also delight us, as we watch them open day by day pouring forth a great mass of petalage as they break from their tight buds. The colors are exactly the tints most of us admire, and if there be any one of these colors we do not like, we can choose others, for most of our Poppies are sold under variety names.

There are two distinct types of annual Poppies: the Shirley is a form of the Corn Poppy, lately known as the Flanders Field Poppy. The Ranunculus-flowered sorts are double varieties of the Shirley type. (*Papaver rhoeas*.) The stems are slender and hairy; the flowers are

single or semi-double and appear to be made of crinkled silk of the sheerest texture; the pepper-box seed capsules are small but filled with seed.

The stems of the Opium Poppy, *Papaver somniferum*, are smooth, glaucous, and thicker than those of the Shirley; the plants are taller; the flowers are larger, single, or completely double, and sometimes the petals are much fringed; and the seed capsules are large. Peony-flowered, Carnation-flowered and Tulip-flowered are some of the names applied to the various varieties of the Opium Poppy. (See illustration, page 127.)

USES. Of course, Poppies are excellent in beds by themselves, or sown in the border, where some other flower has failed. Poppies are like good friends in the garden: they are not mere callers, nor guests who disappoint us.

Some persons believe that Poppies are not good cut flowers. Even a poet has written,

For pleasures are like Poppies spread;
You pluck the flower, its bloom is shed.

But the poet did not know that if he had plucked the Poppy in bud just before it had shed its green calyx, it would have lasted well in water. Poppies are exquisite cut flowers when cut properly.



The graceful, silky petaled Shirley Poppies are old, old favorites

Opium is obtained from the juice of the Poppy which coagulates upon the stems when they are injured. Harvesting of opium takes place about the middle of March. Fresh opium is sold to merchants at the rate of fourteen Egyptian ounces to the rottle (rottle equals twelve English ounces). The merchants shape it into round disks, each weighing from two to three drams. These disks are brushed with the white of an egg to present a better appearance. Dry, pure opium is black-red, resembling cooked coffee. On breaking it shows a soft, compact fracture. It is often adulterated with lentil flour or mixed with "mor higasi," a gum from Hedjaz.

Regarding Flanders' Poppy, the following note appeared in *Gardening Illustrated* (Eng.)

There can be little doubt that the variety is *Papaver rhoeas*, which, according to Loudon, was cultivated along with *P. somniferum* in Flanders and Germany for their seeds, which are bruised for an oil and in cookery as a substitute for that of Olives. The reason it was chosen for Remem-

brance Day was, possibly, from the fact that, as the two Scottish Moderators, Dr. Brown and Sir George Adam Smith, were riding together behind the lines, and as the sun sank westward in a glory of color, lighting up the stretches of Poppy flowers, Sir George, pointing to the Poppies, said to Dr. Brown, "Without shedding of blood is no remission."—Heb. ix., 22. Even in wartime it made the Autumn glorious, and covered with its flame of color all the scars which war had made in the landscape, and where so many brave young lives were laid away in the earth. It seemed, that Autumn day, as if their young life had burst its prison walls and poured in a flood of scarlet on the face of the land.

Some readers may desire to know the history of Shirley Poppies, as it shows what may be done by patient work and application. Reverend W. Wilkes, secretary of the Royal Horticultural Society, first discovered in a patch of the common field Poppy in his garden, one with a thin edge of white and with yellow stamens. Ordinarily the stamens are black or very dark and the dark pollen musses and disfigures the flower when it ripens.

He saved the seed of this Poppy, planted it, secured a number of plants with the white edge more pronounced and with the yellow stamens. Saving from these types and discarding the black-centered plants he developed the present Shirley Poppy with its delicate satiny pinks and roses and even mauve and lavender shades and all with the light centers. It required a number of years and careful selection before the dark-stamened varieties were eliminated and the strain fixed, but now a packet of Shirley Poppy seed comes true.

CULTURE. Poppies are extremely hardy annuals so that the seed may be sown in the Fall, in the Winter upon the snow, in the early Spring, or in the Summer to extend the season of bloom. However, the seeds germinate best in cool soil.

As Poppy seed is very fine, it must be sown thinly. This is best accomplished by mixing sand with it. After sowing, it is best not to place soil over the seeds, but to cover the bed with a cloth or with grass clippings. The covering may be removed as soon as the seed has germinated, but until then it shades the seed and keeps it from drying out.

Thin the plants to stand 6 to 8 inches apart. The seedlings do not transplant readily. Poppies will bloom for a short time only if the seed pods are allowed to develop.

PENTSTEMON • (Bearded-tongue)

(From Greek for *five stamens*, the fifth is sterile and bearded)

Persons who are familiar with the *Gloxinia Pentstemon*, *Pentstemon gloxinioides*, already know its beauty; to others who are not, we would say that the price of a packet of seed is entirely out of proportion to the



Left, Phlox, one of the most satisfactory of all annuals; center, the beautiful Gloxinia-flowered Pentstemon; right, Star Phlox, an interesting form because of its curious, pointed petals

pleasure of bringing these flowers into bloom. The plants grow 2 to 3 feet tall and bear brilliant flowers much like miniature Foxgloves. The colors range from white to deepest crimson, with the various tints of pink and lavender predominating. Usually the throats are white, and contrast nicely with the bright petals. One of the best named strains is Sensation; the plants bear flowers almost 2 inches across. These are hybrids between *P. hartwegi* and *P. cobaea*. (See illustration above.)

USE. These handsome flowers are excellent for the border or for cutting.

CULTURE. Pentstemons are perennials, but the plants of the group described here are not always hardy, and are therefore treated as annuals. Sow the seed in January if a greenhouse is available, otherwise sow in a sunny window or hotbed in March, and transplant to the open soil when danger of frost is passed. Let the plants stand fully a foot apart.

In favorable years, and in the milder sections of northern United States, they will live through the Winter, if protected by a straw mulch, or they may be lifted in the Fall and planted in coldframes for the Winter.

Florists propagate by cuttings taken from the plants in the Fall. The young plants then are wintered in a cool house. Such plants are often in bloom in early Summer.

PERILLA

Perilla is mentioned here because in years past it was a great favorite as a foliage plant. The leaves are dark purple and have a metallic luster causing the plant to resemble a Coleus. It grows about 1½ feet tall. The pinkish flowers, in form like those of Catnip, are inconspicuous. *Perilla frutescens* is the species but there are forms with finely cut leaves and others with spotted foliage, cataloged as *P. nankinensis*.

USE. Perillas are used for masses of bright foliage in the border, where they offer a strong contrast when planted in the rear of low-growing white flowers, such as Sweet Alyssum, Candytuft, and white Stocks, or with the white-leaved Dusty-miller. They make rather attractive low hedges. It must be admitted that this plant is somewhat weedy, but it fits certain situations very nicely.

CULTURE. In some sections of the United States it has run wild. Seeds sown in the open soil in April produce good plants that are effective all Summer. The seed germinates slowly. Let the plants stand 1½ feet apart. They thrive well in poor, dry soil and require but little attention.

PETUNIA

(Named from *petun*, Brazilian name for tobacco, to which Petunia is allied)

Every one has some room for Petunias because they are the most profuse flowering of any annual. Few other annuals produce so many of such large flowers. The colors have been improved to such an extent that there are now varieties to please us all. Recently nearly clear blues have been produced; the deep, rich purples and violets are superb; the light pinks are dainty; the whites are showy; the striped sorts are fantastic; the giant doubles are marvels of the breeder's art; the frilled sorts are popular—but why continue farther? The Petunias are altogether satisfactory. Petunias as cultivated are hybrids between several species, hence the name *Petunia hybrida*. (See illustration, page 118.)

USES. Note that the catalogs list trailing as well as bush sorts. The former are incomparable for the hanging basket, garden and window. The more compact varieties are unexcelled for beds by themselves, or as wide edgings for other plantings. Steep banks which furnish a difficult mowing problem may be planted with Petunias.

The writer will never forget their use in the "Garden of the Heart," in Central Park, New York City. The rock walls rise on several sides of the garden and into the chinks of these rocks Dr. Southwick had sown Petunia seed; the resulting plants have continued to self-sow there year

after year. The flowers are small and the colors not especially good, but as a whole, the effect is worthy of admiration.

CULTURE. Seeds of Petunias may be sown in the sunny window or hotbed in March, or in the open soil in May. The plants should always stand 9 inches apart. As the seeds are very fine, great care is necessary in sowing and in resisting the temptation to allow more plants to grow than will develop properly. Someone has said that the way to get the best single Petunias is to sow the best doubles, because the seeds of the latter do not produce all double flowers. The slowest and smallest seedlings are more apt to be doubles than those that germinate rapidly and grow quickly. The better sorts of Petunia seed will frequently cost more than the ordinary and inferior strains, but they are worth the difference.

Petunias prefer full sunlight, but will bloom in partial shade. They will thrive in rather dry soil if this is well enriched, and also upon soil either too rich or too poor for most annuals, if the moisture conditions are right. Thus one may see that the Petunia is most adaptable.

PHACELIA

(Named from the Greek for cluster; refers to clustering of flowers)

The best known sort is *Phacelia campanularia*, the Harebell Phacelia, which bears Gentian-blue, bell-shaped flowers with contrasting white stamens on one-sided curved racemes. The plants grow 9 inches tall and are somewhat hairy. They remain in bloom for a long time, the flowers being produced in one-sided curving clusters. *P. whittavia*, the Bluebell P., grows 18 inches tall, differing from the above in having a swollen corolla tube three times as long as the lobes. (See illustration, page 42.)

USES. Phacelias are excellent edging plants for blue effects and admirably suited to the rockery. They may be grown in pots in a cool greenhouse.

CULTURE. The seeds may be sown in the open ground in May. It will be well to pinch back a few of the plants while young; this will delay flower production, but result in well-formed plants. These plants prefer full sun and a light soil. Let them stand 8 inches apart.

PHLOX • (Texas-pride)

(Name from Greek for a *flame*, perhaps first applied to another plant)

The brilliance and clean colors of the annual Phlox, *P. drummondii*, make it a favorite in the garden. The flowers range from white to pink, primrose, scarlet, crimson, rose, and lavender, some being perfectly

clear while others have dark or white eyes. An interesting form known as the Star, Quedlinburg, or Fringed Phlox, is worth growing, not so much for its beauty, as for its curious, pointed petals. The plants grow from 6 to 18 inches tall, there being both tall and dwarf sorts. The flowers bloom throughout the Summer. (See illustration, page 124.)

USES. The annual Phlox is excellent for masses in the border, and for solid beds. The various colored varieties when planted in the borders may be so arranged as to form a veritable rainbow of color. The primrose or amber colored variety is an unusual tint for the garden and one highly desired for pleasing combinations. As an undergrowth for the barer-stemmed annuals, a Phlox planting is useful, too. Those who grow Gladiolus in beds often look for a ground cover that will bloom before the Gladiolus. For this purpose few plants equal the annual Phlox. The clear, lovely colors are especially attractively cut and arranged in clear glass bowls.

CULTURE. As this Phlox is a half-hardy annual it is best to sow the seed in boxes in a sunny window or hotbed in March in order to hasten its blooming. It can, however, be sown outdoors after danger from frost is past. Let the plants stand 8 inches apart. It will be wise to pinch back some of them to encourage branching. Phlox prefers the lighter soils, not greatly enriched, and full sunshine. Be sure to cut



Left, the handsome, tall-growing Opium Poppy; center, Physalis seed pods are specially valuable for use in Winter vases; right, Double China Pinks, which frequently bloom for two successive years

the fading flowers promptly so as to develop more bushy plants and lengthen the blooming period.

PHYSALIS · Groundcherry (Chinese Lanternplant) (Bladderherb) (Wintercherry)

(From *physa*, a bladder; an allusion to the inflated calyx)

There are some annuals with showy fruits and among them none is so much admired as the Chinese Lanternplant, which produces large, inflated, orange-red, lantern-like pods containing small, fleshy fruits much like Tomatoes. The flowers are inconspicuous, being borne in the axils of the leaves, and it is after the leaves have fallen that the fruit is most showy. The plants grow 2 feet high and form dense bushes. Two sorts are cataloged: *Physalis francheti* which has large, deep red pods, and *P. alkekengi*, which bears deep orange pods smaller than those of the former species. (See illustration, page 127.)

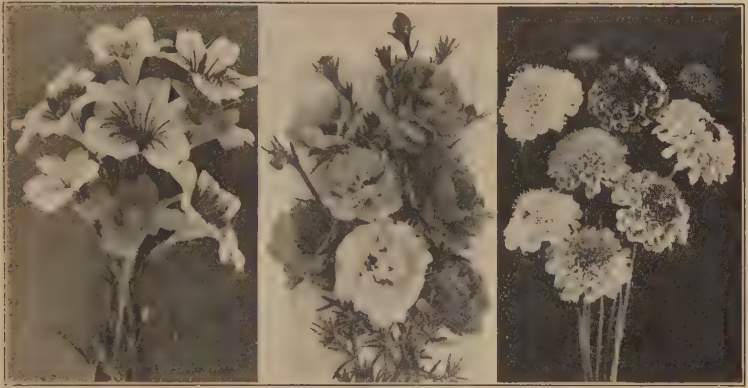
USES. These plants are attractive in vases, for when cut, the fruits retain their color all Winter. In drying these fruits upon the stems, place the latter in a horizontal position, allowing the lanterns to droop sideways; otherwise some of the graceful appearance is lost. As garden subjects they are less valuable because the fruits are produced late in the Summer, and are more or less hidden.

CULTURE. These plants often prove perennial, but one had best sow seed each year. Started in the open ground in early Spring they grow nicely. They prefer warmth and sunshine and enjoy frequent watering. They self-sow and in some places are so prolific as to become almost wild. They are often riddled with flea-beetles which may be controlled by spraying with arsenate of lead.

POPPY (See Papaver, page 121)

PORTULACA · (Rosemoss) (Sunplant) (Seven-sisters)

When one visits an old lady's flower garden, no matter how small it may be, Portulacas are generally seen encroaching on the sidewalks and in other little out-of-the-way places where the dry conditions would support few other plants. The dazzling, glossy-petaled flowers are clear yellow, white, scarlet, crimson, orange, and rose. The double sorts are most charming, and in many ways are superior to the singles. The plants are of a creeping habit, the leaves being moss-like and almost hidden by the flowers. The seeds, which resemble iron filings, have a metallic lustre and are produced in a small, box-



Left, the velvety, Petunia-like flowers of Salpiglossis are charming; center, the dazzling, glossy flowers of Portulaca are at home in even the sunniest and driest places; right, the lovely colors and strong, erect stems of Scabiosa commend it for vase arrangements

like capsule; when ripe the lid falls off and reveals them. (See illustration above.)

USES. About each home there are spots so dry that nothing seems to grow in them. It is in such dry, sun-beaten situations that *Portulaca* thrives to the best advantage. It is, therefore, a good ground cover for beds, for edgings and for rockwork. When planted in urns and other receptacles which are apt to be neglected in the Summer, these flowers seem to go right on blooming in spite of our inattention.

CULTURE. *Portulacas* generally self-sow, and once planted persist from year to year. Seeds may be sown at the end of April and the seedlings thinned to stand 4 inches apart. The seed should be merely raked into the soil and not deeply covered. If given water and a little attention at the start the plants will thrive nicely.

Only a small proportion of the double sorts come true to seed in double form. These sorts also set seed but sparsely.

REHMANNIA

(Named for Joseph Rehmann, physician of Petrograd)

Rehmannias are seldom seen in gardens nor even in catalogs and yet they are lovely, long, bell-shaped flowers; as lovely as almost any flower of the garden.

Rehmannia angulata is really a perennial but, not hardy enough to survive northern winters, it is raised as an annual. The flowers are rosy-purple, over 3 inches long, rather lipped though bell-shaped, produced on long terminal racemes, or else in the axils of the leaves. The flower stems tower 3 feet above the foliage.

USES. Good cut flowers, they are equally valued in the garden for planting among low annuals, inasmuch as their flower stems then give an unusual display.

CULTURE. Seed should be sown as early as possible, because the larger the plants, the more flower stems may be expected. In greenhouses the seeds may be sown in February to bloom in July and August; in hotbeds in March, or if sown in May or June, young plants may be raised which can be carried through the Winter in coldframes to start blooming early the next Summer. All plants may be lifted and stored in protected frames for the Winter, or if a greenhouse is available they may be brought into bloom in February and March. When troubled with white fly, they should be fumigated with calcium cyanide.

It has a suckering habit and sends up young plants which may be potted for Winter storage.

RESEDA • Mignonette

(Latin name *Reseda* means "to calm or appease," and refers to the fact that the plant was employed by the Romans in treating bruises)

The sweet fragrance of Mignonette, or Little Darling, is a luxury in any garden. "Its sweetness wins all hearts."

Some of the Mignonettes produce large trusses of bloom 8 inches long and 2 inches in diameter, while other sorts have much smaller trusses. Generally, the smaller flowered sorts are more fragrant than the giant forms. The flowers are brownish-red or white, and individually are odd in form.

USES. The fragrance of Mignonette suggests many uses, for it renders any bouquet delightful. As a cut flower, some varieties last fully a week in water. Grown in pots for the sunny window, the flowers are a constant delight.

CULTURE. Sow the seed in the open soil and thin the plants to stand 8 inches apart. The Mignonette is intolerant of being transplanted, and if it must be moved, this should only be done when a ball of moist soil is taken with the seedling. If one wishes to encourage long spikes and long stems, the plants should be disbudded so that only a few shoots are allowed to grow. It is often best to give the

plants a dressing of bonemeal early in the season, in order that they may have plenty of plant food available. A watering with liquid manure when in bud is beneficial. Sowing seeds several times during the season will prolong the blooming period.

The plants grow best during the cool weather of Spring and Fall, and it is from the Fall plants that the best blooms are obtained. On light soils the fragrance is said to be stronger than on heavy soils, but the growth is not as tall nor are the spikes as long.

Commercial culture for cut flowers is discussed on page 36.

RICINUS · Castor-bean (*Ricinus*—the classical name)

Were these words meant for boys and girls only we fear they would never be read, because of the unpleasant memories associated with this plant. In the garden, however, Castor-bean, *Ricinus communis*, plants are interesting because of their tall growth and ample leaves which are in the different varieties, purplish-red and maroon. The flowers and spiny fruits are not very showy. The plants range in height from 3 feet to 12 feet.



Mignonette—"its sweetness wins all hearts"

USE. The Castor-bean is rather tropical in appearance and is useful for the center of large beds, for the background of borders and in dense masses to screen unsightly buildings and fences.

Castor oil is obtained from the large seeds, which also contain an active poison. Children should be cautioned against biting into them.

CULTURE. When starting them indoors the best method is to place several seeds in a small pot. When the seedlings have attained sufficient size, all but one should be pulled out. The seeds may also be sown in the open ground, in which case they must be thinned to stand several feet apart. To make them grow tall give them an abundance of water and a mulch of manure.



The showy Castor-bean plant—think of its being the product of a single seed! — fills more space than any other annual

SALPIGLOSSIS (Painted-tongue) (Scalloped Tube-tongue)

Were an artist to look upon a *Petunia* and wish that it had a delicate pattern traced upon its petals, he would create in his mind the *Salpiglossis*. The funnel-shaped flowers are borne upright upon slender but strong branches two feet tall. The flowers of *Salpiglossis sinuata* are crimson and gold, yellow and white, darkest maroon, scarlet and gold, violet and gold, and of many intermediate colors; they are velvety in texture, exquisitely penciled and curiously marbled. The plants are most unpromising in appearance when young. So poor do they appear that some may forget that homely babies sometimes grow into persons of character. So with the *Salpiglossis*; when one least expects it, the plants decide to thrive, and they send up glorious stems of bloom often 3 feet tall. (See illustrations, pages 26 and 129.)

USES. Unlike the *Petunia*, this flower may be cut and will often last longer in water than on the plants. As a garden subject it is attractive, rivaling most other annuals in its regal colors.

F. Schuyler Mathews, in *The Beautiful Flower Garden*, writes:

Salpiglossis is not a prolific bloomer, but it is a dainty, retiring spirit, deserving a quiet corner and a few white-robed neighbors. It will not contribute much to color effect, but it will make up for this shortcoming by an esthetic influence much to be desired in the garden where contrast and variety must constitute a great proportion of what we call beauty. They are recommended by an English writer for Rhododendron beds and must be tolerant of an acid soil.

CULTURE. The seeds are extremely fine and require unusual care when started. It is wise to sow them indoors in March, although seed sown in the open soil will bloom nicely. When the warm days of Spring arrive and the soil is warm, the indoor-grown seedlings may be set out six inches apart.

Little difficulty is experienced in getting the plants to grow after the seed has once germinated. Pinching out the centers of the young plants will cause them to branch. Sandy soils are best suited to Salpiglossis. It grows nicely in partial shade. It is wise to give a stake to each plant to keep them standing erect. The growing of Salpiglossis in the greenhouse is discussed on page 36.

SALVIA • Sage

(The Latin name used by Pliny meaning *safe*, referring to the medicinal properties)

It is unnecessary to describe the Scarlet Sage which is now much planted in some sections of the United States. There is no question regarding its growth or its blooming qualities, but in some cities its hot color is seen on so many streets that it becomes monotonous. Someone has said that the color may be heard before it is seen. Varieties are cataloged which are dwarf, others tall.



Gentian Sage, *Salvia patens*, one of the truest dark blue flowers.

The botanical name is *Salvia splendens*. Pride of Zurich, Bonfire, America, Globe of Fire are some of the varieties listed.

Gentian Sage. *Salvia patens*. This is a most interesting blue Sage which is unexcelled for the depth of its ultramarine blue shade. Although it does not bloom as profusely as the Scarlet Sage (*S. splendens*), yet it is of an unusual color and worthy of culture. (See illustration, page 133.)

Mealycup Sage. *Salvia farinacea*. Really a perennial, this species is not truly hardy in the northern states so that it is treated as an annual. The plants grow 3 feet tall. The lovely blue flowers are borne upon mealy covered spikes. The contrast is lovely.

USES. Were we to cast our prejudices aside we would have to admit that the Scarlet Sage is one of the most popular of red-flowering annuals. When it is planted in long rows, the effect is dazzling. And to those who would plant the Blue Sage we would say that they must not be disappointed when the plants bloom, for they produce fewer flowers than the Scarlet Sage; however, the color is marvelously deep.

CULTURE. Sow the seed of Scarlet Sage in the greenhouse in February or very soon after the first of March in a hotbed or sunny window. After transplanting the seedlings into separate pots or flats, keep them indoors until May when danger of frost is passed, after which set them in the border about 18 inches apart if the tall varieties are grown. Scarlet Sage is propagated from cuttings taken from stock plants salvaged from the garden at the approach of frost. Soaking the seed causes it to come up better.

The Gentian and the Mealycup Sage may be treated the same way, the plants being set at least a foot apart. The roots may be dug and stored out of reach of frost over Winter as these plants are perennials, and are good for more than one season if protected. The Mealycup Sage self-sows freely, so that it may be counted upon to form real clumps of plants when once established.

SANVITALIA

(Named for Sanvitali, a Spaniard)

Sanvitalia procumbens flowers are much like tiny Zinnias, being golden yellow with very dark purple centers, some of them single and others double. The plants grow only 6 inches tall, or rather they are prostrate and spread over the soil instead of growing upward. They start blooming in June and continue until frost.

USE. They may be used as edging plants or for low masses in a border. They are bright and showy in the rockery.

CULTURE. As the plants are hardy the seed may be sown in early Spring in the open and the seedlings thinned to stand 18 inches apart.

SCABIOSA · (Pincushionflower) (Mourning-bride)
(Sweet Scabious (Egyptian-rose) (Mournful-widow)

(Latin for itch, referring to its medicinal use)

The long stems and tufted flowers of the annual *Scabiosa* (*S. atropurpurea*) are charming. The colors also are pleasing in all cases—white, light pink, rose, fiery scarlet, pale yellow, azure blue, and deep blackish-purple. The stamens are light in color and in contrast with the petals appear like pins stuck into the flower, hence the name Pincushionflower. The seed heads are peculiarly bristly. The plants grow 2 to 2½ feet tall. (See illustration, page 129.)

USE. Its long stems, good keeping quality and charming colors combine to make this a most useful cut flower. In the garden also the *Scabiosas* are attractive and popular among bees and butterflies. The maroon or blackish-purple forms supply some of the deepest colors among all the annuals.

CULTURE. The seeds may be sown indoors, but it is just as well to sow them in the open in May. The seedlings should be transplanted to stand 6 to 8 inches apart.

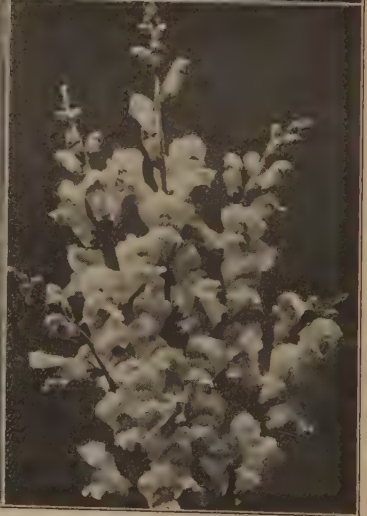
If the seed heads are picked off before they ripen, the production of flowers will be greatly encouraged and the plants will bloom until frost.

SCHIZANTHUS · Butterflyflower (Poor-mans-orchid)
(Fringe flower)

(From the Greek *cut flower*, referring to the fact that the petals are cut and lobed)

The flowers of this plant are a delight to those who admire extreme grace, dainty markings and fantastic forms. Many flowers have been compared by writers to butterflies, but it is only this one that has received the name of Butterflyflower. The Butterflyweed (*Asclepias*) and the Butterflybush (*Buddleia*) are so-called not because they resemble butterflies, but because they attract them.

The flowers of the *Schizanthus pinnatus* are white, pink, crimson, yellow, purple, lavender and rose, and are delicately spotted and blotched like the smaller butterflies. The blooms on a well-grown plant are produced in such profusion as to completely cover it. For



Upper left, the rocket spikes of Stock are almost universal favorites; upper right, Sunflowers help to fill the need for tall-growing, forceful annuals; lower left, the airy gracefulness of the Schizanthus is a delight in any garden; lower right, Snap-dragon, a good garden flower, a splendid cut flower, a flower for all persons and purposes

the garden the dwarfer varieties should be chosen as the tall sorts grow rather slender and crooked. The leaves are attractive, being deeply cut and fernlike. (See illustration, page 136.)

There are really four species found in catalogs: *S. retusus*, *S. pinnatus*, *S. grahami* and *S. wisetonensis* (a hybrid between the last two species). They resemble each other rather closely. Much depends upon the strain purchased. The Dawkins and the Garaway hybrids are considered to be the largest flowered sorts.

USE. The *Schizanthus* is attractive displayed in small vases in which the flowers appear like small orchids. In the garden, unless the low-growing sorts are used, the plants will require staking, because the stems are weak and become crooked when not trained.

CULTURE. Sow the seeds out of doors in late Spring when the soil is warm. The plants do not transplant as readily as some annuals, and it is therefore wisest to move each seedling with a ball of earth. Let the plants stand a foot or 18 inches apart and give them a little shade. The young plants are the better for the support of a stake early in their growth; it need not be strong nor over 2 feet tall.

The plants bloom in two months from seed. Pinching them early in their growth will make them more bushy and less straggling, a tendency to the latter form being their fault. Spraying with water daily in Summer will keep them healthy.

Greenhouse culture is discussed on page 36.

SENECIO (Jacobaea) • Purple Groundsel (Purple Ragwort)

(Latin from *senex*, old man, refers to gray pappus of seeds)

In English gardens one finds a lovely dwarf annual listed as a *Jacobaea*, *Senecio elegans*, which grows less than 18 inches tall and is completely covered with double purple, crimson or white flowers, not unlike a double *Cineraria* of the greenhouse.

USES. It is a splendid edging plant and cut flower in such cool climates as England and should succeed in many sections of the United States, although it produces but little bloom and an abundance of foliage in Columbus.

CULTURE. Seed should be sown in the spot where they are to grow. The plants require about 8 inches space.

SILENE • Catchfly

(From the Greek for *saliva*, referring to the stickiness of the stems of some species)

The Sweet-william Catchfly, *Silene armeria*, is a little known but worthy annual and grows 1 to 2 feet tall. The flowers are delicate pink or rose-colored, and are produced in compound cymes, each flower with a short stem, thus differing from a similar though biennial species, *S. compacta (orientalis)*, which has very dense heads of bloom. The leaves of *S. armeria* are gray and smooth, as are also the stems.

USES. An addition to the rockery, border or cutting garden, the Sweet-william Catchfly should be known to be appreciated.

CULTURE. Sow the seeds in May out-of-doors where they are to grow or transplant from seed sown earlier indoors.

SNAPDRAGON (See *Antirrhinum*, page 56)

STOCK (See *Matthiola*, page 110)

SWEET PEAS (See *Lathyrus*, page 100)

TAGETES • Marigold

(Tages was an Etruscan god, but perhaps the name is of another derivation)



Three kinds of Marigolds; African (the largest); Mexican (the small one); and French (with marked petals)

Even the name—**Mary's Gold**—captivates us, and what could be more appropriate? The flowers of these old, old favorites are in some varieties veritably made of flakes of gold. How easy it is to be wealthy with Mary's Gold!

KINDS TO GROW. The Aztec (African) Marigold (*T. erecta*) has large balls of petals—some golden and some lemon—that are universally admired. Stiff and formal though they are, they will always be favorites. They grow 2 to 5 feet tall.

The French Marigold (*T. patula*) is typically golden and lemon, but its flowers are often marked with crimson and maroon. They are smaller than in the other species, and the plants are more dwarf, growing

only a foot tall. Hybridized with the African Marigolds, a tall strain is now on the market.

The Striped or Mexican Marigold (*T. signata pumila*) is a compact, bushy sort with finely-cut leaves and golden-yellow, starlike flowers of great brilliance. The foliage does not have so strong an odor as the others. This sort is not cultivated as often as it deserves. Seedsmen hide it away in their catalogs, either in small type or else they do not mention its merits as an ideal edging plant. (See illustration, page 15.)

USES. The African Marigolds are a bold addition in the background of the border and in large beds. The French and Mexican forms are excellent edging plants, their shining flowers appearing to good advantage. All three are useful for cut flowers, because of their good keeping qualities and stiff stems. A favorite combination for the table is Marigolds and Larkspur. When most other flowering plants are becoming dry and brown in the Fall, the Marigolds show up in all their brilliance. Must we add, for the sake of truth, that the plants have a peculiar odor which is offensive to some persons?

CULTURE. Marigolds, being perfectly hardy, can be sown in a warm spot very early in the Spring. They will stand transplanting nicely. Set all three sorts at least 18 inches apart; the tall sorts may well be set 3 feet apart. They prefer the lighter soils and a sunny exposure, but are adaptable to less favorable places. Give the taller sorts a stout support early in growth to keep them neatly upright.

In saving seed from our own plants it is wise to pull up such as do not meet our ideals, allowing only the best to set seed.

TORENIA • (Wishboneflower)

(Named for Olaf Toren, a Swedish clergyman who discovered
Torenia asiatica while traveling in China in 1750)

The Wishboneflower is a gem. Those who have not tried this annual, nor seen it growing, have a pleasant surprise in store for them if they will raise a few plants. The flowers of *Torenia fournieri* are violet and lavender with a prominent yellow blotch on the lip. There is a less attractive white variety. In the center, the stamens are arranged in the shape of a wishbone, hence the common name. The pistil in the center is sensitive, and when it is touched, the two lobes gradually close and hold any pollen which may have fallen upon them. The plants grow a foot tall and bloom till late frost. (See illustration, page 143.)

USE. For close inspection, by virtue of its innate charm, the *Torenia* is a flower of beauty and interest, although its garden effect is not as showy as that of many other annuals.



Here before a tall hedge the Annual Phlox has been planted to edge a bed of perennials.

CULTURE. The seed is fine and when carefully sown in late March in a sunny window, will give excellent plants that will bloom all Summer. They are tender annuals so the seedlings should not be placed in the open border until the weather is warm. They rather enjoy half-shade.

We were interested to read in Bailey's *Standard Cyclopedia of Horticulture* that in Florida *Torenia* is an excellent substitute for the Pansy, which is cultivated with difficulty that far south. Young plants spring up in the rainy season, coming from self-sown seed. It is found abundantly in the sort of moist situations which, in the North, suit Forget-me-nots.

TRACHYMENE (*Didiscus*) • Laceflower

(Name from *trachus*—rough; *hymen*—a membrane; channels of the fruit)

Some few years ago an old favorite annual given the pleasing name of Laceflower was introduced. It is *Trachymene caerulea*. It is beautiful but does not always succeed as well as the old standbys. The flower heads are made up of small azure flowers produced in umbels like those of the Wild Carrot. The stems are somewhat hairy and grow 2 feet tall. The plants flower during July and August. (See illustration, page 90.)

USES. This flower is better for cutting than for garden ornament, as the plants are not particularly showy in beds. Arranged in a vase with small foliage, the blooms display their charms to advantage. With greenhouse culture it thrives. The hairy stems and leaves catch the dust which gives the plants a shabby appearance.

CULTURE. Successful in cool sections but not thrifty in hot, dry Summers. Sow the seed in pots or flats indoors or in a hotbed in March. Give each plant a foot of space in the garden. The forcing of Laceflower is discussed on page 35.

VERBENA • Vervain

(Name derived from the Celtic *ferfain*)

The rich colors of the Verbena have endeared it to us for years and years. Our mothers and their mothers grew it, and we have seen them use hairpins to get it to root along the stems. Most persons know its range of brilliant colors; the pinks are like those found in *Trailing-arbutus*, especially in the variety *Miss Ellen Willmott*; the purple is truly royal; the scarlet is like rich velvet; the white is as pure as snow; the blue and lavender tints are dainty; and besides the clear

color varieties, there are sorts with white and dark eyes, and others that are striped. All the above are forms of *Verbena hybrida*. There is another annual species of great charm known as the Moss Vervain (*V. erinoides*). Its flowers are purplish-blue or white, and the leaves are fernlike. (See illustration, page 143.)

The Lemon Verbena, so-called, is not really a *Verbena* nor an annual, but in California at least, is a woody, trailing plant. It is *Aloysia* (*Lippia*) *citriodora*. The leaves are deliciously lemon-scented. Small plants may be raised during the Summer and brought indoors for Winter, as they will not tolerate the cold.

USE. The Verbenas are suitable flowers for ground covering, and make good masses in the border. As cut flowers they are attractive when loosely arranged in low bowls and vases.

The Moss Verbena is especially recommended for hanging baskets and urns, although useful in the garden as well.

CULTURE. The seeds of *Verbena* appear not unlike small twigs and are slow to germinate. It is well to keep the seed bed covered with burlap to retain moisture. Sow the seed in a hotbed or sunny window in March and the plants will begin to bloom in June. The florist sows the seed in February because he desires them to be in bloom when sold in May. Sown outdoors when the trees are in leaf, the plants flower in July or August, keeping up a continuous display. Set the plants 12 to 18 inches apart and they will make a dense mat of bloom. It is well to pinch them back early in their growth. Keep the flowers cut so that the plants may not go to seed.

VIOLA (See Pansy, page 117)

ZINNIA • (Youth-and-old-age)

(Named for Johann G. Zinn, professor of medicine at Gottingen University)

At last the Zinnia has come into its own. Because it is of easy culture and does well for anyone, it has in the past been admired less than it deserves. Recently the seed growers of California have developed enormous flowers of unusual shapes and with excellent colors. We may now obtain clear rose, rich purple, golden yellows, the palest cream colored sorts, as well as salmon, orange and crimson. Note that the catalogs are listing curled and crested sorts and wonderful new giant-flowered varieties, measuring 7 and 8 inches across. In the opposite direction there are charming dwarf sorts which produce small flowers that cover the plants. The taller sorts are three feet in height while the dwarf varieties, known as Tom Thumb, Pompon or



Upper left, the Zinnia is a hearty flower that laughs at adverse conditions; upper right, Torenia flowers provide a striking contrast between violet and yellow; lower left, Verbenas are old favorites, but they win new admiration each year; lower right, a typically beautiful variety of the Orchid-flowering type of Sweet Peas; center, Virginian-stock may be familiar to many who do not know its name

Lilliputian Zinnias (all of these are forms of *Zinnia elegans*), are only a foot tall.

There is, however, another species, *Z. haageana*, the Orange Z., which is dwarf. Its flowers are commonly shades of orange, but many new colors are advertised. There is also a type with starlike, narrow petaled flowers known as *Stellata* hybrids. This attractive dwarf form is offered in all colors. (See illustration, page 143.)

USE. The modern Zinnias, though stiff, may be effectively arranged for home decoration and show up most effectively under artificial light. There are many pure colors and as these usually combine well, the effects possible are charming. In Texas, Mrs. J. C. Darnell reports that her Zinnias grow 8 feet tall. She says that, in arranging long-stemmed sorts, it is wise to remove all leaves, as the flowers last longer. For low bowls the dwarf sorts are superior to the larger-flowered tall varieties. They need no added green to set them off, for the *Zinnia* is well furnished with foliage.

In the garden, *Zinnia* effects are rich, the plants are thrifty, and the colors are decided. In bold masses for distant effects few other annuals can rival them. The dwarfs are especially valuable as edging plants, their profusion of bloom and foliage serving to cover the soil completely. The rank foliage provides a background for lower growing annuals.

CULTURE. Give these excellent new strains a little extra care and note their appreciation. Sow the seed in a sunny window in March. Transplant the seedlings to shallow boxes. Set the plants out in the open soil, when the weather is warm, placing the plants in well-enriched soil. One might even be kind enough to place some manure deep down beneath where they are to be planted.

It is only seed of the largest flowering sorts that should be expected to give the giant flowers. There is a difference of opinion relative to the distance apart to set the plants. Some persons set them 18 inches apart, and thereby get the largest flowers; others claim that by planting closely, the plants produce fewer, but larger flowers. It is easy enough to follow both sorts of advice and see for yourself. The dwarf sorts are surely better when each plant is given a space of 2 feet on each side.



EVERLASTINGS

"Nay, cheer up, sister, life is not quite over, even if the year has done with Corn and Clover, with flowers and leaves; besides, in fact, it's true some leaves remain and some flowers, too, for me and you."

—CHRISTINA G. ROSSETTI.

AFTER flowers have bloomed in profusion all Summer, then comes the frost and some are killed; a little later comes a real freeze and we are without flowers in our garden. We feel the lack of blossoms with which to grace our tables and mantelpieces, and it is then that we wish that we had raised some everlasting flowers. It is strange that every garden does not contain some sort of everlasting, especially since so few persons have greenhouses. Many delightful sorts may be grown. (See illustration, page 13.)

With real flowers—both florist's sorts and home-grown everlastings—available for the Winter bouquet it is odd that some ingenious women will make parody flowers from waste paper and colored cloth; and it is shocking to find that less ingenious persons should buy the questionable, so-called artificial flowers. Generally the colors are gaudy and the structure of the flowers is no less absurd than would be an elephant with a tiger's head. You may have seen this sort of Roses colored like Zinnias, Nasturtiums with Violet leaves, Lilies of like oddity—but why stop to contemplate this awful perversion of taste? Especially when there are the everlastings?

Classes of Everlastings

There are four sorts of plants used as Everlastings, namely: annual everlasting flowers, perennial everlasting flowers, ornamental grasses and the decorative seed pods of various shrubs, weeds and garden plants.

CULTURE OF ANNUAL EVERLASTINGS. The various Everlastings may be given much the same treatment as other annuals. The seed may be sown indoors in March in order to get early plants, or the various sorts may be sown in the open soil when danger from frost is passed.

Picking. With but few exceptions the Everlastings are cut before they are fully open because in many cases it is the outside in-

volucre which is straw-like and retains its colors. Allowed to open fully, *Helichrysum* and *Acroclinium* are not as attractive because the centers of the flowers become brown.

Drying. Before drying Everlastings the leaves should be stripped from the stems and the flowers hung upside down. If the stems are tied with string some will drop from the bunches as they shrink but if a rubber band is used it will tighten as the stems dry. If placed in vases immediately the stems absorb moisture from the air and the heads droop, and the stems wilt and become crooked. It is, therefore, wise to dry the flowers quickly and store them in a dry place until furnace heat is used.



Strawflowers. The upper blossom is in the right condition to cut; the lower one is old, unshapely and worthless for a bouquet

It is, however, advisable to have some of the stems curve in order to add gracefulness to the vase arrangements. W. C. Egan, in the *Standard Cyclopedia of Horticulture*, writes of a method he has used to produce arching stems. "Take a long sheet of pliable cardboard eight inches wide, tack one edge lengthwise on the top of a shelf at the front, bringing it out and downward so as to form a half circle, and fasten it at the bottom. Then lay the freshly picked flowerstems on the shelf with the heads hanging down. It is sometimes necessary to place a weight on the stems to keep them in place."

AMMOBIUM • Winged Everlasting (Everlasting Sand-flower)

A pretty little Everlasting, *A. alata*, has small white flowers with yellow centers. The plants are covered with silvery hairs and stiff, branched, winged stems. Few catalogs list this flower but it is well worthy of culture. It grows best in sandy soil.

CATANANCHE • Cupids-dart (Cupidone) (Blue Succory)

One is amused to read that this plant was used by the ancient Greeks as one of the principle ingredients in their love potions. It is, strictly speaking, a perennial and is not, perhaps, properly included in this little book. The flowers of *Catananche caerulea* are blue and white

and resemble those of Cornflower but are hardly as handsome, although they have the advantage of being useful as Everlastings.

The plants grow two to three feet tall, and may be either raised from seed or divided. They prefer a sandy soil and should be set a foot and a half apart.

GOMPHRENA · Globe-amaranth

The tiny Clover-like flowers of *Gomphrena globosa* may be amaranth (true purple), white, or rose in color. They have frequently been called Bachelor's Buttons but this name is also applied to *Centaurea* and the double Buttercup. The plants grow one to two feet tall.

USE. When the flowers have fully developed cut and dry them for Winter bouquets. The white sorts are not as clear and pure as the purple. Gomphrenas are attractive in the garden but the colors harmonize with few other shades; therefore they should be planted among white flowers. Their colors are heightened by the contrast.

CULTURE. Sow seed in early Spring as advised for other Everlastings, but as the seeds germinate slowly it is wise to soak them in hot water before sowing and to cover the soil during germination with grass clippings or a piece of burlap. Thin so that plants stand six to eight inches apart.

HELICHRYSUM · Strawflower

The Strawflower is the largest and showiest of the Everlastings. *Helichrysum bracteatum* is the single type, but there are double forms cataloged as *H. monstrosum*. Named varieties in the various colors also are cataloged. The flowers range from white to yellow, crimson, pink, rose, chestnut, and rich purple. The darker shades are the most showy for Winter drying. The whites, though pretty when a few are grown, are too pale to produce brilliant effects. The plants grow two feet tall.

USE. Besides being useful as Winter flowers, they are really beautiful garden subjects. Remember to cut the blooms before they are open; even the small, undeveloped buds will open when dried.

CULTURE. It is usually wise to start these flowers early in a sunny window. Let the plants stand 12 inches apart.

HELIPTERUM (Includes ACROCLINIUM and RHODANTHE)

A splendid group of everlastings are properly called *Helipterum* and include (*Acroclinium*), Rose Everlasting and *Rhodanthe*.

The so-called *Acroclinium* is one of the smaller, daintier everlastings, growing 12 to 15 inches tall and bearing pink or white flowers with yellow centers. The flowers resemble those of *Helichrysum* but are smaller and rather more bell-shaped.

The plant is attractive in the garden and also useful as a source of cut flowers, which should be cut before they are fully open.

H. manglesi, Swan-river Everlasting is cataloged as *Rhodanthe* and is one of the slender-stemmed Everlastings. The flowers are rather bell-shaped, pink and white, and smaller than those of *Helichrysum*. The plants grow a foot tall and are dainty and graceful, but not showy.

In *H. humboldtiana*, the flowers are small, yellow and arranged in terminal clusters. The foliage is gray. This sort is not often cataloged.

USE. For small basket and vase arrangements during the Winter, these little flowers are charming. They are raised by the acre in Europe where for years they have been popular. They are strongly recommended in the catalogs for pot plants in the Winter window.

CULTURE. The *Rhodanthes* are lovers of hot weather. The seed, if sown outdoors, should be planted only when the soil and air are warm. It is better not to move the plants but to thin them to stand 6 inches apart.



The translucent, papery seed heads of Honesty are admirable for bouquets.

LUNARIA · Honesty
 (Honest Pocketbook)
 (Money-in-both-pockets)
 (Popes-money in France)
 (Judas-penny, in Hol-
 land) (Venus-looking-
 glass)

Honesty, *Lunaria annua* (*biennis*) is one of the old-fashioned Everlastings. Its main value is due to its large, silky, papery seed pods.

The flowers are sweet-scented but Cabbage-like in character; in general, the whole plant resembles a weed, but its seed pods are so interesting that it is worth growing. When the seed pods are thoroughly ripe the outer covering is shed and the skin-like partition through which the seeds may be seen, is disclosed. The fact that these partitions are transparent has given to the plant its names of Honesty and Honest Pocketbook. It is classed as both an annual and a perennial.

CULTURE. The plants grow well in shady places and are at home in ordinary garden soil as well as in the damper spots. Sow the seeds in the open ground early in order to allow time for a large number of seed pods to mature. Seed may be sown in Summer, in which case the plants will produce the seeds the following year. Let them stand 8 inches apart.

LIMONIUM (Statice) • Sea-lavender

In order that this book may include all the various Everlastings several perennial sorts are included. *Limonium latifolium* is a popular perennial sort growing 2½ feet tall with deep lavender-blue flowers borne in great profusion so as to form a mist-like mass of airy gracefulness a foot across. It has large, glossy, leathery leaves which lie upon the soil.

Limonium (Statice) sinuatum is an annual sort with mauve or white flowers forming a one-sided spike 30 inches tall. The stems are winged. The leaves lie flat on the soil and are scalloped. *L. bonduelli* has yellow flowers but resembles *L. sinuatum* in growth.

L. suworowi, Russian Cat-tail Statice, bears few branched, tail-like spikes of rose-colored flowers. The leaves are all from the soil, the flower stems being leafless.

USE. The Statice lend the same grace to a bouquet as does Babysbreath (*Gypsophila*). The lavender, deep blue, yellow, and white flowers are exceedingly useful and do not need to be placed in water.

CULTURE. Statice thrive in almost any soil but clay. Sow the seeds in the hotbed or a sunny window in March. When the seedlings are large enough prick them out in flats so that they stand 2 inches apart. The stems of the annual Statice are weak and require staking. If they are grown in rows bamboo stakes and string may be used. The following notes taken from a professional florists' journal are of interest:

It should be mentioned that raising the seedlings is a somewhat tricky operation. The seed is sold in the form of the dried flowers, as it is impos-

sible to free it from the flower tissues; it is small, much smaller than Aster seed, and black in color. The dried flower trusses are better for sowing if pulled apart, tedious task though it is. In any case, the flowers should be laid on their sides, not upright nor upside down, and just covered with soil. Unlike any other seed the writer is acquainted with, the radicle or rootlet appears from the top of the seed, not from the base where it is attached to the ovary. The rootlet pushes forth and, when it takes hold of the soil, pulls from the dead flower two narrow leaflets which then push through the soil. It follows that the seedlings appear in bunches but as a general rule many of the flowers contain no seed, a fact easily understandable, as many of them are staminate or male flowers.

It will be realized that unless started on their sides, the young seedlings have small chance of freeing themselves from the mass of rubbish. If upside down they cannot get clear and if upright, the seed leaves are liable to rot before the rootlet can descend sufficiently to exert its pulling powers. The pricking off process must be done expeditiously, for if left longer than ten days or so after the seedlings appear, the decaying flowers will cause wholesale damping-off. The pricking off must be done before the rough leaf appears. A small trowel is a good tool to use for lifting the seedlings and the worker must carefully pull the seedlings from among the mass and plant them so that the seed leaves just clear the soil. The amount of root is, of course, infinitesimal but the worker must avoid setting any plants with broken roots. Usually the germination is good enough to allow one to be discriminating. After pricking off, keep the flat covered with glass for a few days and exercise care in watering. After the plants get hold, they can be treated the same as indoor raised Asters. The flowers should be cut only when dry, and do not have to be placed in water.

XERANTHEMUM • Immortelle

The *Xeranthemum annuum* is an interesting Everlasting with purple, lavender, pink, and white flowers. It grows 3 feet tall and produces its flowers in clusters.

USE. This and Catananche are the only blue or purple Everlasting flowers. As the foliage is light silvery green, these plants are interesting for the garden as well as for cutting. Of the sorts of Everlastings that may be grown in most sections of the United States this is, perhaps, the least successful.

CULTURE. Sow in the open in late April. Thin the plants to stand eight inches apart.

DECORATIVE SEED PODS

Many of our weeds and garden flowers produce seed pods which are useful for combining with our Strawflowers and grasses in Winter bouquets. Although these pods are usually brown, they are of interesting forms. Among these plants are:

CATTAIL. All are familiar with Cattails. Small bunches of them with their dried leaves are attractive in tall, cylindrical vases. Cut

the Cattails before they mature, otherwise they become fluffy.

DOCK. Several species of this common weed produce large, irregular clusters of winged seeds which are said to resemble ground coffee by boys and girls who collect them to "play store."

EVENING-PRIMROSE. The seed pods of the Evening-primrose are borne in tall spires. They may be easily found along railroad tracks and in waste places. Each capsule is about an inch long and is four-parted at the top.

GLOBE-THISTLE (*Echinops*). These perennials in our gardens bear grayish-green, globular, thistle-like heads that are interesting.

GOLDENROD. Goldenrod dried quickly will retain its color for some months and for large mass effects is a dainty material.

GYPSOPHILA (Babysbreath). For use as a dried flower in Winter the double form of the perennial *Gypsophila* is exceptionally "misty" and adds an airy grace to a bouquet.

HYDRANGEA. The large seed heads of the shrubby *Hydrangea paniculata grandiflora* are frequently cut and kept in Winter vases.

JIMSON-WEED. This obnoxious, thorny weed has one good feature in that it produces interesting, decorative, thorny capsules.

LANTERNPLANT, Chinese. (See *Physalis*, page 128.)

LUNARIA. This plant, which bears decorative seed pods, has already been discussed under the flowering Everlastings.

MILKWEED. There is no question about the decorative beauty of an opening Milkweed pod just as it scatters its seeds and sends its silken parachutes into the air. Unfortunately such seed pods are too messy for our homes. After the gauzy seeds are shed, however, the pods are exceedingly interesting, appearing like shells poised upon the stems.

MULLEIN. The farmer sees little to admire in these tall, majestic spires of seed capsules, but the city dweller may find them of interest for use in the house.

PLANTAIN, EVERLASTING. Growing in most sections of our country are one or more species of Everlastings with woolly gray leaves and small, creamy-white straw flowers. If gathered before the seeds ripen they have a real value for Winter use.

ROSE. Along our roadsides grow many species of Roses that bear clusters of Rosefruits or "hips" which can add color to an otherwise dull bouquet of dried flowers and seed heads.

ROSE-OF-SHARON. This shrub variously known as Hibiscus and Althaea, produces capsules which, while not attractive in color, are interesting in form.

RUE. In some gardens of herbs and collections of Shakespearean plants Rue is grown. The plants have a repugnant odor but the seed capsules are interesting. They are globular and cluster at the ends of the stiff stems.

TEAZLE (Fullerweed). The Teazles of our roadsides are prickly and forbidding but nevertheless interesting when Winter comes. It may be of interest to know that these spiny seed heads are used commercially for combing the nap upon the finer woollens.

VELVETLEAF (Abutilon). In our rich garden soils there often spring up plants with heart-shaped leaves as smooth and velvety as a kitten's ear. The plants bear small yellow flowers which are followed by urn-shaped capsules, attractively crimped at the apex. These capsule-bearing stems are popular subjects for those who are fond of painting in ink.



ORNAMENTAL GRASSES

The appreciation of grasses as garden subjects has progressed but little since the following appeared in Hooper's *Garden Guide*, in 1883 :

The increase of refinement in horticultural taste has in recent years brought into prominence several classes of plants which were formerly neglected as matters of ornament. They lack the brilliancy of color, and were, therefore, not deemed worthy to be elevated from the position of "wayside weeds" to that of denizens of well-kept gardens. Beauty of form, however, has fortunately come to be considered a feature of no mean value; and consequently plants which can not arrest the eye by their splendor, have been sought after for the gratification they give to elevated taste by their grace and elegance. Among these are the grasses.

If grasses were more rare we would think them the daintiest of flowering plants. Plumy, waving grasses, silvery, slender grasses, tall, majestic grasses, dainty, tufted grasses—all of these have a real place in our gardens. (See illustration, next page.)

USE. The grasses lend a mistiness to the flower border that is charming. The low sorts are excellent for bordering tall plants which should have their feet covered. A bed of Cannas may well be planted with a fringe of Fountain Grass around its margin. The beauty of some of the gaudier colored flowers is enhanced if they are surrounded with some of these grasses. Other grasses are useful to cut for the Winter bouquet, and they are attractive planted in beds by themselves.

CULTURE. In general, grasses are easy to grow; the blunder usually made is that they are not given sufficient room to develop. They are small at transplanting time, and it seems a waste of garden space to plant them a foot or more apart, but this is just what should be done. Each grass plant should be set out by itself except in the case of the tinier sorts which may be transferred in tufts. The particular differences in culture are noted under each of the grasses.

BLEACHING GRASSES. It is often well to bleach grasses, especially if they are to be dyed. Bleaching is done as follows: Keep the flowers in a warm place until well open; then lay them in a bath containing a solution made up at the rate of two quarts of water, half ounce of soda and one ounce of chloride of lime. Cover the bath and leave in



Some of the more popular ornamental grasses;
a, Cloudgrass; b, Jobs-tears; c, Quaking Grass;
d, Rabbittail Grass

a moderate temperature for four or five days. When the flowers become bluish white, pour off the fluid and replace with a fresh solution of chloride of lime without soda. When the flowers are quite white, dry in a warm room or oven. In all cases of dyeing, shake well after dipping and dry in an airy room.

AGROSTIS · Cloudgrass

Agrostis nebulosa is a fine, hairlike grass, giving a hazy

effect when planted in the border. (See illustration above, a.) It blooms in the Summer and grows 18 inches tall.

AVENA - Animated Oat

Avena sterilis is a sort of Oat which has a long appendage which is sensitive to moisture so that when held in the moist hand or thrown upon wet soil, it becomes lively, writhing about as though alive.

BRIZA · Quaking Grass

There are two annual species of this genus: *Briza maxima*, which grows 18 inches tall, and *B. minor (gracilis)*, which is but a foot tall. The ornamental parts of this grass—known as spikelets—are flat and either oval or heart-shaped. (See illustration above, c.) Even in the growing condition they appear as though pressed, and will retain this characteristic when used for the Winter bouquet. The seed may be sown in open soil. Let plants stand 6 or 8 inches apart.

BROMUS · Brome Grass,

Bromus brizaeformis has flattened, drooping spikelets somewhat resembling those of the Quaking Grass. The height is 2 feet; the plant is often a biennial.

COIX · Jobs-tears

Coix lacryma-jobi produces curious pearly-gray seeds that hang from leaf-like sheaths. Each seed is about the size of a cherry stone and hard. (See illustration, page 154, b.) They were often used as teething beads because mothers used to think that babies were raised properly only when they had a string of these beads about their necks. Height, 2 to 3 feet; set plants 12 inches apart.

ERAGROSTIS · Love Grass

Eragrostis interrupta (elegans) (japonica) is a grass closely resembling *Agrostis* when seen in masses. The spikelets are small and "dancing," and are useful for bouquets. Height, 2 feet.

HORDEUM · Squirreltail Grass

Hordeum jubatum is of interest because of its short, feathery heads of bloom. Sow in April and thin to one foot. Height, 2 to 3 feet.

LAGURUS · Rabbittail Grass

Lagurus ovalus is a short growing grass with white, downy tufts 1 to 1½ inches long at the tips of the stems. It is useful as a low edging for other annuals. It is also good for bouquets. It prefers a sandy soil and grows 12 to 18 inches tall. (See illustration, page 154, d.)

PENNISETUM · Fountain Grass, Feathertop

P. villosum (longistylum), 2 feet tall, has graceful, drooping, greenish-white plumes. *P. ruppelianum* is a perennial, 3 feet high, has purple plumes and graceful green foliage. *P. macrostachyum (macrophyllum) atrosanguineum* has rich, coppery bronze foliage and plumes, and grows 4 feet high. *P. japonicum* is the tallest sort, attaining 5 feet.

Sow the seeds in frames in March, transplanting seedlings to small pots so the plants will not crowd. Allow 15 to 18 inches between plants when setting them out in May.

ZEA (Variegated) · Striped Maize (Rainbow Corn)

A number of variations of the ordinary field corn are attractive materials for bold masses. In fact, they include the tallest annual grasses. The leaves are striped with yellow, white, red, or pink, and combine attractively with such cut flowers as Torchlilies.



ANNUAL VINES

One often desires a vine to shade a porch or hide an unsightly fence and one that will grow quickly. It is at such a time that the value of annual vines is appreciated. There are coarse sorts and dainty ones—types for every use.

Among the most popular vines are those described below:

CARDIOSPERMUM · Heartseed, Balloonvine (Love-in-a-puff)

The Heartseed, *Cardiospermum halicacabum*, is a rapid-growing climber which does best in warm situations. It has small white flowers and seed vessels that resemble tiny balloons an inch in diameter. The plants grow 8 to 10 feet tall and may be used in any place where vines are needed.

CULTURE. The seeds should be sown early in May in a light soil in a warm situation.

COBAEA · (Cup-and-saucer-vine)

This rapid growing vine, *Cobaea scandens*, is most attractive, being unusually graceful for a rampant climber. It is as much admired as any annual sorts. Although not an annual it is so treated in the North. The vines attain a height of 30 feet and the flowers are large and bell-shaped, ranging in color from pink to purple. They are followed by plum-shaped fruits. (See illustration, page 158.)

CULTURE. Sow the seeds in April, one to a pot. Press them into the soil edgewise, as they are large and flat, and germinate poorly when placed broad side down.

DOLICHOS · Hyacinth-bean

This rapid-growing, twining climber flowers freely. The flowers are purple to snow white, pea-shaped, and followed by purple seed pods. The foliage is heart-shaped and bright green.

There are several good varieties of the species, *Dolichos lablab*; Daylight, which was introduced from Japan, grows 10 feet tall, and has snow white flowers; Darkness is identical in every way with the above, except that the flowers and seed pods are rich purple in color.

USE. These vines are used as a screen, on trellises, or wherever a rapid growing vine is wanted.

CULTURE. Plant in May where the vines are to grow and provide strings for them to twine around. The vines do not transplant well, but they are not affected by pests.

ECHINOCYSTIS · Mock-cucumber

The Wild Cucumber is one of our fastest growing vines. The common species, *Echinocystis lobata*, has light green leaves. The white flowers appear during July and August and are followed by an abundance of long, spiny seed pods. The plants grow from 8 to 30 feet tall.

The vines may be grown on trellises or for covering old trees and fences. They are not greatly admired by the author because of the spiny seed pods.

The seeds may be sown in Autumn, in which case they should be nicked. If sown in Spring they should first be soaked in warm water. They will grow in any soil.

GOURDS

The Gourds are novel annual climbers with ornamental foliage and singularly shaped fruits which are often strangely colored and marked.

The following are especially odd and are the ones most commonly cataloged:

DIPPER GOURD. If this variety is grown on the ground its fruits will be of a different shape than if it is supported on a trellis. The fruit is slender and neck-like for two-thirds of its length and then widens into the form of a bowl. (See illustration, page 158.)

HERCULES-CLUB. This bears the largest of any of the Gourds, the fruits growing to a length of 4 feet.

TOWELGOURD or DISHCLOTH GOURD. The sponge-like, porous pulp dried and used as a dishcloth or sponge gives excellent results.

PEAR GOURD. The striped fruits of this variety are very pretty.

SERPENT GOURD. The fruit is 3 to 5 feet long and very slender. It is striped like a reptile and becomes carmine when ripe.

Other interesting shapes are produced by the Egg-, the Lemon-, the Orange-, the Apple- and the Pipe-gourds.

USE. Gourds are grown in America mostly for their unique fruits, and for covering trellises, old stumps and fences. In Japan, the tough fiber on the inside is used for the soles of sandals. In tropical countries, the shells are dried and used for dishes and drinking vessels. The Pipe-gourd is used in making Calabash pipe bowls.

CULTURE. Gourd plants are generally troubled with insect pests so that they should be planted in places where their expected shabbiness will not be too evident. Plant them 6 inches apart. Do not transplant, but sow the seed where the plants are to grow.



Upper left, Cobaea, a rapid climber of pleasing character; upper right, Morning-glory, an old kitchen porch favorite, but useful elsewhere, too; lower left, the Cypress-vine is graceful and has brilliant flowers; lower right, blossoms and an immature fruit of the interesting Balsam-apple; center, the Dipper Gourd combines oddity with usefulness

HUMULUS • Hop

The Japanese Hop vine, *Humulus japonicus*, is a rapid climber, attaining a height of 20 to 30 feet. It is much prettier than the common Hop, its luxuriant foliage making a dense ornamental covering. *H. japonicus* var. *variegatus* is a form with variegated leaves that is preferred by some persons.

The Japanese Hop is one of the best for covering verandas and trellises. Sow in light, rich soil at the base of the support upon which it is to climb. Heat or drought do not affect it, and it is not bothered by insects.

IPOMOEA • Morning-glory

In the beauty and delicacy of its brilliant flowers, the Morning-glory is unsurpassed, provided good sorts are chosen.

SPECIES. The common Morning-glory, *Ipomoea purpurea*, is commonly known as *Convolvulus major*. It is free flowering and grows rapidly to a height of 15 feet. The flowers come in all colors, the blues being particularly attractive. (See illustration, page 158.)

USE. This vine may be used on trellises, arbors, verandas, or to cover any unsightly object. Much of the unpopularity of the Morning-glory in recent years has resulted from the fact that persons have allowed their Morning-glories to self-sow and have, therefore, only the poorest colors, and smaller-flowering vines, which are often little better than weeds.

CULTURE. The vine thrives in almost any soil or situation. To hasten germination soak the seed in warm water for from one to two hours before sowing.

MOMORDICA • Balsamapple, Balsam-pear

The Balsamapple is a remarkably handsome and ornamental vine, with beautiful dark green, lobed foliage and warty fruit. When ripe the fruit opens displaying the carmine interior.

SPECIES. The Balsam apple, *M. balsamina*, grows 15 to 20 feet tall and has orange-colored apple-shaped fruits. (See illustration, page 158.) The Balsam-pear, *M. charantia*, grows about 10 feet tall and has bright yellow, pear-shaped fruit. This is the commoner form in cultivation and is larger than the Balsamapple.

USE. These vines are excellent for covering rockwork, trellises and stumps.

CULTURE. Sow the seed in light, rich soil, about May (or when the trees are starting out in leaf) at the base of the support upon which the vines are to climb.

PHASEOLUS · Scarlet Runner Bean

The Scarlet Runner, *Phaseolus coccineus* (*multiflorus*), has attractive Pea-like flowers of a brilliant scarlet that are followed by an abundant crop of beans. During the war many persons planted this vine for beauty and ate the beans.

CULTURE. The plant is of easy culture. Sow the seeds at the base of the trellis upon which they are to grow, when the soil is warm and frosts are passed.

QUAMOCLIT · Starglory (Includes Cardinal Climber and Cypressvine)

The Cypressvine, *Quamoclit pinnata*, is often cataloged as an Ipomoea. It is one of the daintiest of vines having fine, fern-like foliage and being dotted with small, star-shaped flowers—orange, scarlet, and white in color. (See illustration, page 158.)

It is very desirable for covering small, ornamental trellises. It is also a good climber to grow in pots during the Winter, or anywhere that graceful foliage is desired. It grows from 15 to 20 feet high.

The Cardinal Climber, *Quamoclit pinnata* x *Q. coccinea*, the Starglory, is a vine of great charm because of its bright red, Morning-glory-like flowers. The leaves are less finely lobed than those of the Cypressvine. The vines grow 10 to 20 feet and flower all season long.

The seeds had best be soaked in hot water for a day before they are sown, after the seeds are filed or cut to let the moisture enter. The vines enjoy a light soil and a sunny location.

THUNBERGIA · Clockvine (Black-eye-susan-vine)

This is a low-growing climber with perky, black-eyed flowers which in the commonest species (*Thunbergia alata*) are yellowish buff in color. *T. alata alba* has white flowers and those of *T. aurantiaca* are orange with a characteristic dark eye. None of the species ever attain a height of over 6 feet, and, unless encouraged to climb, will grow downward or along the ground.

USE. This tendency to trail indicates the value of the plant for hanging baskets, porch boxes and in rockeries. In all these places it is highly effective, but especially in the last named, because of the rustic appearance of the vine.

CULTURE. The seeds of *Thunbergia* may be sown outdoors where they are to grow, but it is better to start them indoors in April.

TROPAEOLUM · Nasturtium, Canary N.

The popularity of the Nasturtium is chiefly due to the fact that it is an elegant and luxurious climber with lustrous foliage and profuse flowers of many colors—pale primrose-yellow, geranium-scarlet, deep scarlet, sulphur-blotched red, orange, creamy white, brilliant salmon, deep garnet, orange, and vermilion. (See illustration below.)

SPECIES. The common species is *Tropaeolum majus*, but the best colors will be found in *T. lobbianum*. Both species are very rapid growers, quickly reaching a height of 15 feet.

Tropaeolum minus, the Bush N., is useful as an edging plant.

Tropaeolum peregrinum (*canariensis*), the Canary N. (Canarybird-vine) is a rapid growing climber with canary-yellow blossoms resembling a bird with wings half expanded. The flowers are arranged in sprays. It resembles Nasturtium but has cut petals and lobed leaves.

USE. Nasturtiums may be used as bedding plants if the runners are pinned down. They are

also unexcelled for verandas, trellises, to cover old stumps, fences, rough ground, or any unsightly object. The seed pods may be picked while green and put up in vinegar for pickles. Every gardener knows that the Nasturtium is without a rival as a cut flower. The more freely the flowers are cut the more freely they will be produced. The Canary N., however, is poorly adapted to hot regions but is splendid for cool greenhouses.



The amusing Canary-birdvine is delightful. Like Nasturtium it is a *Tropaeolum*



Nasturtiums provide abundant flowers, shade and seed pods for pickles

CULTURE. Nasturtiums may be sown outside when the ground is warm, as the seeds will rot in cold, damp soil. A rather poor soil is best as the vines will produce many leaves and but few flowers in rich ground. These vines are of easiest culture requiring almost no care.

If the plants become affected with black lice, spray them with some form of tobacco extract.

The plants of Canary N. should be started in pots indoors in March and planted out when all danger of frost is past. Seed may also be sown in the open border late in the Spring. For the greenhouse, sow in January and train up the posts for early Spring bloom.

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TABULAR LIST OF ANNUALS

The names here used are those approved by Standardized Plant Names, the approved list of the principal Horticultural organizations co-operating.

Tr.—Trailing plant. Cl.—Climbing plant. O.—Sow seed out-of-doors. I.—Sow seeds indoors. *—Not included in the body of the book.

Name	Height (in inches)	Color of flower	Dates for sowing	Remarks
<i>Abronia umbellata</i> (Sandverbena)*	6	Rose	I. March	Rockery. Really perennial
<i>Acroclinium</i> (See <i>Helipterum</i>)	12	Crimson	I. March	Seeds difficult to germinate. Rockery
<i>Adonis aestivalis</i> (Summer Adonis)*	6, 18	Blue, white	I. March	Ideal edging plant
<i>Ageratumoustonianum</i> (Mexican A.)	18	Scarlet	I. April	Misty; useful for bouquets
<i>Agrostis nebulosa</i> (Cloudgrass)	24	White	I. April	Dainty; not showy. Rockery. Edging
<i>Alonsoa acutifolia</i> (Maskflower)	Tr., 6	Crimson	I. March, O. April	Ideal edger
<i>Alyssum maritimum</i> (Sweet Alyssum)	48-72	Crimson	O. May	Tall; bold. Likes poor soil. Plumes pendant
<i>Amaranthus caudatus</i> (Love-lies-bleeding)	48-72	Crimson	O. May	Tall. Plumes upright
<i>hypochoeridriacus</i> (Princesfeather)	36-48	White	O. May	Leaves narrow
<i>salicifolius</i> (Chamelon A.)	24-36	White	O. May	Leaves reddish, yellow and green
<i>tricolor</i> (Josephs-coat)	24	Various	I. April	Winged stems. Everlasting. Small, button-like flowers
<i>Ammobium alatum</i> (Winged Everlasting)	12, 24, 36	White, bluish rev.	I. March, O. April	Popular bedder. Cut flowers
<i>Antirrhinum majus</i> (Snapdragon)	24	Yellow, white	I. March, O. April	Cut flower. Gray leaves
<i>Arctotis grandis</i> (Bushy A.)	18	Yellowish	O. May	Do not transplant
<i>Argemone grandiflora</i> (Picklepoppy)	60	Orange and scarlet	O. April	Very fine foliage
<i>Artemisia sacrorum</i> (Russian Wormwood)	36	.....	I. July	Grown as greenhouse annual. Late
<i>Asclepias curassavica</i> (Bloodflower)*	24	Bright crimson	O. April	Winter and Spring bloom
<i>Avena sterilis</i> (Animated Oat)	24	Blue, pink, white	O. April	Seeds absorb moisture and move when ripe
<i>Bartonia</i> (See <i>Mentzelia</i>)	24	.....	O. April	Whole plant filled with red juice
<i>Blitum capitatum</i> (Strawberry Spinach)*	12	.....	I. April, O. May	Good edger. Dainty Daisies
<i>Brachycome iberidifolia</i> (Swan-river-daisy)	36	.....	O. May	Flattened spikelets moving in wind
<i>Briza maxima</i> (Quaking Grass)	24	.....	I. April, O. May	Like above but smaller spikelets
<i>Bromus brizaeformis</i> (Quaking Bromegrass)	12-18	.....	I. February	Tiny flowers. Dainty for interplanting
<i>Browallia demissa</i> (elata)	12	.....	I. April	Good pot plant
<i>speciosa</i>	48 Cl.	.....	I. April	Bears tiny watermelon-like fruits. Vine
<i>Bryonopsis laciniosa</i> (Bryonopsis)*	24	.....	O. April	Popular late flowering. Marigold of Shakespeare's time
<i>Cacalia</i> (See <i>Emilia</i>)				
<i>Calendula officinalis</i> (Pot-marigold)				

Tabular List of Annuals—Continued

Name	Height (in inches)	Color of flower	Dates for sowing	Remarks
<i>Callistephus chinensis</i> (China-aster).....	18	Various	I. March	One of most popular cut flowers
<i>Campanula ramosissima</i> (Bluestar Bell- flower)*.....	12	Blue	I. March	Rockery. Dainty bells
<i>Cardiospermum halicacabum</i> (Balloonvine).....	72 Cl.	White	I. pots April	Dainty vine. Inflated seed pods
<i>Celosia argentea</i> (Feather Cockscomb).....	36-48	Yellow to crimson	O. April	Very showy. Easy culture
<i>cristata</i> (Cockscomb).....	24	Yellow to crimson	O. April	Monster, but interesting
<i>Centaurea americana</i> (Basketflower).....	36-48	Lavender	O. April	Closes at night. The largest of all
<i>cineraria</i> (Dustymiller).....	24	Purple rose	I. March	Gray-leaved edger
<i>cyaneus</i> (Cornflower).....	36	Blue, pink, white	O. Sept. or April	Choose double sorts. Cut flower
<i>imperialis</i> (Royal Sweet-sultan).....	36	Blue, pink, white	I. April, O. May	} Difficult to prevent damping-off
<i>moschata</i> (Sweet-sultan).....	36	Blue, pink, white	I. April, O. May	
<i>Centranthus macrospion</i> (Spur-valerian)*.....	12	Rose, white	O. April	Rockery. Border
<i>Chrysanthemum carinatum</i> (Annual C.).....	24	White, marked var.	O. April	Good in cooler regions
<i>coronarum</i> (Crowndaisy).....	24	Sulphur, yellow	O. April	Cut flower
<i>segetum</i> (Corn-marigold).....	24	Golden	O. April	Cut flower
<i>Clarkia elegans</i>	12-24	Rose to white and purple	I. April	Good cut flower and bedder in cooler regions
<i>pulchella</i>	12-24	Rose to white and purple	I. April	Petals three-notched at tips
<i>Cleome spinosa</i> (Spiderflower).....	48-60	Magenta, white	O. April	Interesting long stamens and pistils
<i>Cobaea scandens</i> (Purplebell C.).....	120 Cl.	Rosy purple, white	I. March pots	Rampant but dainty
<i>Coix lachryma-jobi</i> (Jobs-tears).....	48	.....	I. pots April	Grass producing teething-beads
<i>Collinsia bicolor</i> (Chinese-houses).....	18	Blue, pink, and white	I. April	Rockery. Cool regions. Upper petals white, lower pink or blue
<i>Convolvulus tricolor</i> (Dwarf C.).....	6	Violet, rose, striped	O. April	See Ipomoea for other sorts
<i>Coreopsis drummondii</i> (Goldenwave).....	24	Yellow	O. April	Resembles perennial sorts but with maroon markings
<i>tinctoria</i> (Calliopsis).....	8, 36	Yellow, maroon	O. Sept., March	Popular bedder, dwarfs for edging
<i>Cosmos bipinnatus</i> (Cosmos).....	48-72	Crimson to white	O. April	Tall, Autumn flowering. Cut flowers
<i>diversifolius</i> (Black C.).....	36	Lilac	O. April	Commonly cataloged as <i>Bidens dahlioides</i>
<i>sulphureus</i> (Yellow C.).....	48-72	Yellow	I. March	Seldom blooms unless days are short
<i>Cucurbita</i> (Gourds).....	120 Cl.	.....	O. May	Fantastic fruits. Coarse foliage
<i>Cupressa ignea</i> (Fiery Cuphea)*.....	18	Scarlet	I. June	Grown as pot plant. Window boxes
<i>lavea</i> (Red-white-and-blue-flower)*.....	24	Red, violet and white	I. June	Winter plant
<i>Cynoglossum amabile</i> (Houndstongue).....	36+	Blue	I. April, O. May	Like Forget-me-not but taller
<i>Datura chlorantha</i> (Yellow Floripondio).....	24	Yellow	I. April	Large trumpets
<i>fastuosa</i> (Cornucopia F.).....	18-24	White, purple re- verse	I. April	

Tabular List of Annuals—Continued

TABULAR LIST OF ANNUALS

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Name	Height (in inches)	Color of flower	Dates for sowing	Remarks
<i>Delphinium ajacis</i> (Rocket Larkspur).....	48	Various	O. Sept., March	Popular cut flowers, border plant
<i>consolida</i> (Field Larkspur).....	48	Various	O. Sept., April, I. March	Good bedder
<i>Dianthus chinensis</i> (China Pink).....	12-18		I. March	Dainty. Rockery. Interplanting among other annuals
<i>Diascia barberae</i> (Twinspur).....	18	Pink, orange		Long season. Daisy like
<i>Didiscus</i> (See <i>Trachymene</i>)				Do not transplant. Cut flower
<i>Dimorphotheca aurantiaca</i> (Cape-marigold)...	12-18	Orange, lemon to white	I. March	(Various fruits. Dainty foliage.
<i>Dolichos lablab</i> (Hyacinth-bean).....	120 Cl.	Purple, white	O. May	Tubular flowers. Dainty foliage.
<i>Ecballium elaterium</i> (Squirting-cucumber)*...	108 Cl.	White	O. May	Adapted to cooler regions; greenhouse
<i>Eccremocarpus scaber</i> (Gloryflower)*.....	72 Cl.	Scarlet, orange	I. February	Weedy but attractive
<i>Echinocystis lobata</i> (Mock-cucumber).....	120 Cl.	White	O. March	Attractive for interplanting
<i>Emilia flammea</i> (Tasselflower).....	18+	Scarlet, orange	O. April	Feathery grass. Dainty for bouquets
<i>Eragrostis japonica</i> (Interrupta).....	18	.....	O. April	Advancing color
<i>Erysimum perofskianum</i> (Blistercress).....	12-24	Brilliant orange	O. April	Popular for adverse places
<i>Eschscholtzia californica</i> (California-poppy)...	12	Yellow, pink, red	O. March, Sept.	Unusual border plant related to
<i>Euphorbia heterophylla</i> (Painted Spurge)....	36	Red leaves at tips	O. April	Poinsettia
<i>marginata</i> (Snow-on-the-mountain).....	36-48	Leaves margined white	O. March	Weedy but showy
<i>Gaillardia amblyodon</i> (Maroon G.).....	18-24	Brown-red or ma- roon	O. April	Not as popular as perennial sorts
<i>pulchella</i> (Rose-ring G.).....	18-24	Yellow and rose purple	O. April	Var. <i>Lorenziana</i> is tubular
<i>Gamolepis tagetes</i> *.....	—12	Orange yellow	I. March, O. May	Tiny plants
<i>Gazania splendens</i> (Pied G.)*.....	—12	Orange, black spot- ted at base	I. February	Not truly an annual
<i>Gilia capitata</i> (Globe Gilia).....	24	Blue	I. March, O. April	Flowers in small, dense heads
<i>coccinea</i> (Scarlet G.).....	36	Scarlet	I. March, O. May	Only good in cool climates
<i>coronifolia</i> (Texasplume).....	40	Scarlet	I. March, O. May	Besting greenhouse for early Spring bloom
<i>tricolor</i> (Birdseye G.).....	24	White, purple	O. April	Rockery
<i>Godetia amoena</i> (Farewell-to-Spring).....	24	Rose to white	O. April	} Not adapted to hot, dry climates.
<i>grandiflora</i> (Whitney G.).....	18	Purple, rose to white	O. April	} Beautiful cut flowers
<i>Gomphrena globosa</i> (Globe-amaranth).....	24	Magenta, amaranth salmon white	I. March, O. May	Everlasting. Not unlike clover
<i>Gypsophila elegans</i> (Common G.).....	12-18	White	O. April	} Cut flower. Successive sowings must
<i>muralis</i> (Cushion G.).....	12	Rose	O. April	} be made for continuous supply

Tabular List of Annuals—Continued

Name	Height (in inches)	Color of flower	Dates for sowing	Remarks
<i>Helianthus annuus</i> (Sunflower).....	96-108 48	Golden	O. April	Bold background. Immense flowers
<i>debilis</i> (Cucumber S.).....		Golden, sulphur	O. April	Good cut flower. Smaller flowers than above
<i>Helichrysum bracteatum</i> (Strawflower).....	36	Red, pink, yellow, white	I. March, O. May	Largest everlasting. Easily grown
<i>Helipterum manglesi</i> (Mangles Everlasting)...	18	Rose	I. March, O. May	Rather bell-shaped flowers. Everlasting
<i>roseum</i> (Rose E.) (Acroclinum).....	12-18	Rose	I. March, O. May	Not unlike a smaller and daintier <i>Helichrysum</i>
<i>Hibiscus manihot</i> (Sunset H.).....	140	Soft yellow, maroon spots	I. pots March	Very desirable but rare
<i>trionum</i> (Flower-of-an-hour).....	Tr.	Yellow	O. April	Weedy. Ground cover
<i>Hordeum jubatum</i> (Squirreltail Grass).....	24	.....	O. April	Attractive grass
<i>Humulus japonicus</i> (Japanese Hop).....	108 Cl.	.....	O. April	Very rapid growth. Vine
<i>Hunnemannia fumariaefolia</i> (Goldencup)....	18-24	Soft yellow	O. May	Lovely. Cut flower. More refined than <i>California-poppy</i>
<i>Iberis amara</i> (Candytuft).....	12+	White	O. April	Good cut flowers. Short season
<i>umbellata</i> (Purple C.).....	12+	Purple, carmine, pink	O. April	Good cut flowers. Edging. Short season
<i>Impatiens balsamina</i> (Garden Balsam).....	12-18	Various	O. April	Formal. Popular
<i>Ionopsidium acaule</i> (Diamondflower).....	24-36	White	O. May	Rockery
<i>Ipomoea purpurea</i> (Morning-glory).....	60+ Cl.	Various	O. April	Covering unsightly fences
<i>setosa</i> (Brazilian M.)*.....	120+ Cl.	Purple	I. pots April	Stems with coarse purple hair
<i>Kochia scoparia</i> (Belvidere).....	18-24	.....	O. May	Bushy plants, resembling some of the evergreens
<i>trichophila</i> (Summer-cypress).....	18-24	.....	O. May	Grass with downy tufts of bloom
<i>Lagurus ovatus</i> (Rabbittail Grass).....	12	.....	O. April, I. March	Popular cut flowers
<i>Lathyrus odoratus</i> (Sweet Pea).....	48+ Cl.	Various	O. October, April	In cooler climates for hedges. Mallow- like flowers
<i>Lavatera trimestris</i> (Treemallow).....	24-60	Rose, white	O. May	Unusual, Daisy-like
<i>Layia elegans</i> (Tidytip).....	12	Yellow, tipped white	O. May	Rockery. Related to <i>Phlox</i>
<i>Leptosiphon hybrida</i> *.....	12	Rosy carmine	I. April	Daisy-like, different flowers; fine foliage
<i>Leptosyne stillmani</i> (Stillman Coreopsis).....	18	Yellow	I. April	Popular for sprays of everlastings
<i>Limonium bonduelli</i> (Sea-lavender).....	18-24	Yellow	I. March	Long spikes of everlasting flowers
<i>sinuatum</i> (Notchleaf S.).....	18-24	Violet to white	I. March	Dainty, not showy, cut flowers
<i>suworowi</i> (Soworow S.).....	18	Rose	I. March	Edging. Glistening flowers
<i>Linaria bipartita</i> (Toadflax).....	18-24	Various	O. April, May	Early start necessary if they are to give best show of bloom. Edging
<i>Linum grandiflorum</i> (Flowering Flax).....	8-12	Crimson	O. April	
<i>Lobelia erinus</i> (Edging L.).....	8-12	Violet, blue, white	I. February, March	

Name	Height (in inches)	Color of flower	Dates for sowing	Remarks
<i>Luffa cylindrica</i> (Towelgourd).....	72-Cl.	White, not showy	I. March	Large fruits with spongy pulp within Grown for papery seed pods
<i>Lunaria annua</i> (Honesty).....	18	Magenta	O. April, I. March	
<i>Lupinus hartwegi</i> (Hartweg Lupine).....	36	Purple, pink	I. pots March, O. May	
<i>hirsutus</i> (Blue L.).....	24	Blue	I. pots March, O. May	Splendid cut flowers in cooler regions. Excellent for beds
<i>luteus</i> (European Yellow L.).....	24	Yellow	I. pots March, O. May	
<i>Lychnis coeli-rosa</i> (Rose-of-heaven).....	12	Flesh	O. April	Naturalize; tiny plants tolerating some shade
<i>Malcomia maritima</i> (Virginian-stock).....	12	Purple, pink, white	O. April	
<i>Matthiola incana</i> (Stock).....	18	Various	I. March	
<i>Maurandia barclaiana</i> *.....	120 Cl.	Violet	I. March	Delightful fragrance Dainty for trellises or window boxes Useful for conservatories
<i>Iophospermum</i> (Plumeseed M.)*.....	72	Purple	I. February	
<i>Mentzelia aurea</i> (Blazing-star)*.....	18	Golden	O. May	
<i>Mesembryanthemum crystallinum</i> (Iceplant). <i>pyropeum</i> (Fi.-marigold).....	8, Tr. 8 Tr.	White, not showy Rose	I. March I. February	Prized for foliage which appears as though covered with ice Large, showy flowers for full sun. Really not an annual Unusual because leaves are sensitive to touch For wet places
<i>Mimosa pudica</i> (Sensitiveplant).....	18	Rose	I. February	
<i>Mimulus luteus</i> (Monkeyflower).....	18	Scarlet, crimson, yellow mottled	I. March to April	
<i>moschatus</i> (Muskplant).....	12	Pale yellow	I. January to April	Grown as pot plant Reliable blooming. } Low hedges Mirabilis jalapa (Four-o'clock).....
<i>Morbidica balsamina</i> (Balsamapple).....	36	Various	O. April	
<i>charantia</i> (Balsam-pear).....	108 Cl. 108 Cl.	Yellow	O. May, I. pots Apr O. May, I. pots Apr	
<i>Myosotis dissitiflora</i> (Forget-me-not)*.....	12	Blue, pink	I. April	Many of the varieties for bedding be- have as annuals Good in cooler regions
<i>Nemesia strumosa</i> (Nemesia).....	18	Orange, rose to white	I. March	
<i>Nemophila maculata</i> (Spotted Nemophila)...	10	White, black spot- ted	I. April	Rockery. Tiny plants; dainty blooms Fragrant at night Fine foliage. Cut flowers. Border. Short season
<i>menziesi</i> var. <i>insignis</i> (Baby-blue-eyes).....	10	Blue, white	I. April	
<i>Nicotiana glauca</i> (Winged Tobacco).....	60	White	I. March	
<i>syvestris</i> (Tobacco).....	60	White to crimson	I. March	
<i>Nigella damascena</i> (Love-in-a-mist).....	12-18	Blue	O. April	

Tabular List of Annuals—Continued

Name	Height (in inches)	Color of flower	Dates for sowing	Remarks
<i>Oenothera</i> America (Evening-primrose).....	12	White	O. May	} Flowers open at dusk } Ever popular. Beds. Hairy stems } and buds
<i>drummondii</i> (Drummond E.).....	12	Yellow	O. May	
<i>Papaver rhoeas</i> (Shirley Poppy).....	18+	Various	O. Sept., March	Smooth stems and buds. Source of opium
<i>sonniferum</i> (Opium P.).....	24	Various	O. Sept., March	Long tail-like spikes
<i>Pennisetum latifolium</i> (Fountain Grass).....	36	.....	I. April	Really perennial, but not perfectly hardy
<i>Pentstemon gloxinioides</i> (Gloxinia P.).....	24	Crimson, rose and white	I. February	Weedy. Purple foliage
<i>Perilla frutescens</i> (Perilla).....	24	.....	O. April	Best of all bedding annuals because of its profusion of bloom
<i>Petunia hybrida</i> (Petunia).....	12	Various	I. March, O. April	Bell-shaped flowers. Rockery
<i>Phacelia campanularia</i> (Harebell P.).....	12	Blue	I. April	Popular climber. Beans edible
<i>whitlavia</i> (Bluebell P.)*.....	12	Blue	I. April	Lovely colors. Bedding. Cut flower
<i>Phasolus coccineus</i> (Scarlet Runner Bean)...	72 Cl.	Scarlet, white	O. May	} Grown for showy orange-scarlet, } inflated pods
<i>Phlox drummondii</i> (Drummond P.).....	—18	Various	I. March	
<i>Physalis alkekengi</i> (Strawberry Ground- cherry).....	18	White	O. April	For hot, dry places. Glistening flowers
<i>francheti</i> (Lantern G.).....	18	White	O. April	} Soak seeds before sowing. Popular } dainty vines
<i>Portulaca grandiflora</i> (Portulaca).....	8	Various	O. April	
<i>Quamoclit hybrida</i> (Cardinal Climber).....	72 Cl.	Cardinal	I. pots, March	Really a lovely, rather unknown peren- nial treated as annual
<i>pinnata</i> (Cypressvine).....	72 Cl.	Red, white	I. pots, March	Noted for fragrance. Do not transplant
<i>Rehmannia angulata</i>	48	Rose	I. March	Giant annual, well known
<i>Reseda odorata</i> (Mignonette).....	12-18	Greenish yellow	I. pots April	Resembles wild Black-eye-susan. Cut flower
<i>Ricinus communis</i> (Castor-bean).....	108+	.....	I. pots March	Lovely. Border. Seedlings appear worth- less but they usually develop all right
<i>Rudbeckia bicolor</i> (Pinewoods Coneflower)*..	24	Yellow, black, cen- ter	O. April	Rare deep color. Too few flowers
<i>Salpiglossis sinuata</i> (Salpiglossis).....	18-24	Purple, crimson to yellow	I. March	Popular. Reliable
<i>Salvia patens</i> (Gentian Sage).....	18	Deep blue	I. March	Resemble small Zinnias. Ground cover
<i>splendens</i> (Scarlet Sage).....	8-36	Scarlet	I. Feb., March	} Rockery. Dainty. For intermixing with } other more reliable annuals
<i>Sanvitalia procumbens</i>	6 Tr.	Golden	I. March, O. May	
<i>Saponaria calabrica</i> (Calabrian Soapwort)*..	12+	Rose	I. March	Popular cut flower
<i>Scabiosa atropurpurea</i> (Sweet Scabious).....	36	Various, including maroon	O. April, I. April	Popular in cool regions. Good pot plant
<i>Schizanthus pinnatus</i> (Butterflyflower).....	36	White, rose, purple, spotted	I. June, April, O. May	

Name	Height (in inches)	Color of flower	Dates for Sowing	Remarks
<i>Sedum caeruleum</i> (Blue Stonecrop)*.....	8	Blue	I. March	Rockery
<i>Senecio elegans</i> (Purple Groundsel)*.....	18	Purple, rose to white	I. March	Good in cool regions, useless to grow where hot Summers prevail
<i>Silene armeria</i> (Sweet-william Campion).....	12	Rose	O. April	Cut flowers
<i>Statice</i> (See Limonium).....	24	Soft pink	O. April	Not as often cultivated as it deserves
<i>Tagetes erecta</i> (Aztec Marigold).....	48	Gold, lemon	O. April, I. April	Cut flowers. Popular. Generally called African Marigold
<i>patula</i> (French Marigold).....	18	Gold, spotted ma- toon	O. April, I. April	Edging plants. Well known
<i>signata</i> <i>pumila</i> (Mexican Marigold)	12	Gold	O. April, I. April	Good edging plant
<i>Trachymene caerulea</i> (Laceflower).....	24	Soft blue	I. March	Cut flower. Often grown in greenhouses
<i>Tropaeolum majus</i> (Nasturtium).....	48 Cl.	Scarlet to yellow	O. April, May	Popular cut flower
<i>minor</i> (Dwarf N.).....	12	Scarlet to yellow	O. April, May	Good edger for poor soil
<i>Verbena erinoides</i> (Moss Vervain) hybrida.....	8 Tr. 8 Tr.	Magenta, white Various	I. March	Finely cut foliage
<i>Vinca rosea</i> (Madagascar Periwinkle)*.....	18	Rose, white	I. Feb., March	Edger. Clean colors
<i>Viola tricolor</i> (Fancy).....	12	Various	I. January, Feb. O. August	Splendid bedding plants
<i>Xeranthemum annuum</i> (Immortelle).....	18-24	Purple, white	I. March	Popular. Well known
<i>Zaluzianskya capensis</i> (Nightphlox)*.....	3-5	White to crimson	O. May	Everlasting, resembles a Cornflower
<i>Zea mays</i> (Rainbow Corn).....	48-60	.....	O. May	Rockery. Related to Four-o'clock
<i>Zinnia elegans</i> (Zinnia).....	48	Various	I. March, O. April	Leaves striped red and white
<i>haageana</i> (Orange Z.).....	18	Yellow, blotched maroon	I. March, O. April	Ever popular because of easy culture. Cut flowers



To Make This Book More Useful

NO book can tell you all you should or want to know about such a subject as gardening, nor even about a single phase of it such as the use of annuals. Full knowledge can come only from actual experience, observation, study and the application of the lessons to be learned from the living plants themselves, in addition to reading.

To be of real help these facts and discoveries should be set down and kept for future reference. We have left the remaining pages in this volume blank so that upon them you can jot down notes about what you observe in your garden and other gardens; facts and data for ready reference; records of plant growth and cultural operations—so that each year's garden work will represent the mature judgment and accumulated wisdom of the seasons that have gone before. To the extent that you make use of these pages you will get from the rest of the book the helpful information and inspiration that it contains.

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